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Amateur Radio

Volume 74 no 9
September 2006

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Our Cover this month

Two of the Briar Hill Primary School School students and their teacher Natalie Will show their obvious delight at the success of the ARISS contact with astronaut Bill McArthur NA1SS on the International Space Station. Kitty Nguyen is holding the microphone. Unfortunately, the correspondent did not identify the student in the background. See the story starting on page 16.

Contributions to Amateur Radio
Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, 'How to write for Amateur Radio' is available from the National Office on receipt of a stamped self-addressed envelope.

Back Issues
Back issues are available directly from the WIA National Office (until stocks are exhausted), at $4.00 each (including postage within Australia) to members.

Photostat copies
When back issues are no longer available, photocopies of articles are available to members at $2.50 each (plus an additional $2 for each additional issue in which the article appears).

Disclaimer
The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

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A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

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Representing
The Australian Amateur Radio Service

Member of the
International Amateur Radio Union

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Editorial comment

Peter Freeman VK3KAI

How time flies!

It seems that it was only a few days ago that I sat down to write the Editorial for the August issue – where have the last four weeks gone? The August issue was undergoing preparation in the days immediately following the weekend of the GippsTech conference. Most of those interested in VHF/UHF and microwave communications will be aware of the annual Gippsland Technical Conference (GippsTech), held in early July each year at the Gippsland Campus of Monash University in Churchill. This event is hosted by the Eastern Zone Amateur Radio Club Inc. I have a key role in this event – I am the Conference Chair (it was my idea to hold the first conference, back in 1998). A couple of hectic last weeks led to an extremely busy weekend for the conference, then finalising the August issue. Work then imposed another busy time, anticipated but always tiring.

Project progress?

The net result has been very little time to devote to the long list of projects that sit on the "to do" list. There has been little time spent "on-air", although some of the time at the computer has been spent with the radios running in the background. Have you managed to move some of those projects off the "to do" list, even if only along to "currently refining"?

We have some regular contributors of technical articles, as well as those that coordinate the monthly columns. These individuals keep this journal going, with both news and new ideas and reflections on implementation of ideas. This helps to stimulate most of us to consider just how we might improve our own station.

I urge you all to consider writing up your most recent project and submitting it to this journal for publication. The lead time for publication is reducing. Many may consider that this is a good thing – if I write an article, it will appear in print sooner. The flip side needs to be considered: a shorter time between submission and publication means that the list of available articles must be growing smaller!

I have received several comments complementing me on this journal. I accept those comments, but must point out that the praise must really rest with those of you who submit articles for publication. As Editor, I can only work with the material that I have available. If I only have several articles about operating experiences, then that will be reflected in the journal contents. On the other hand, if the pool of available articles is entirely made up of HF antenna articles, then I can only publish such articles. To achieve a reasonable balance in this journal (magazine), I need to be able to select across a variety of topic areas. Given the diversity of our hobby, I hope that you all agree that we need to have a spread of topics in each issue. The result should be that most readers should find something stimulating and/or interesting, sparking that desire to consider a positive improvement in station components or layout, antennae in use, exploring a new mode of operation, or simply making the time to turn the radio on and making some on-air QSOs.

I must also remind you of the need to have a spread of material across different technical levels – we must have material that has appeal to the "old hands" as well as the "new chums".

This month's reading and next month's activity.

In this issue, we see several smaller articles covering a variety of topics, both of general interest and of a technical nature. In my attempts to publish articles predominantly in order of receipt, that was how the articles fell. It is good to have articles of differing lengths – it allows for greater flexibility in selecting content. I hope that you find the reading stimulating.

On the inside back cover, we can see an example of how we, as a hobby, are being portrayed to an outside group – in this case to Scouts. It reminds us of an annual opportunity to promote our hobby to many of the youth in our community: Jamboree On The Air (JOTA), and the recently added Jamboree On The Internet (JOTI), has a long history with Amateur Radio. I encourage you to consider being involved – I am sure that there will be a Scout or Guide group nearby that would appreciate the chance to be involved, if they were aware of opportunities that you might be able to provide.

73 – Peter VK3KAI

Michael Owen VK3KI

The 13th IARU Region 3 Conference

The 13th IARU Region 3 Conference was held in Bangalore, India from 7 to 10 August 2006.

The IARU (the International Amateur Radio Union) was described in WIA Comment published last July in *Amateur Radio*. A little of its history was set out, and the importance of its role presenting a global position for the amateur service, particularly within the ITU framework, was described.

The Regional organisations were referred to and their participation in the Administrative Council of the IARU, the body that determines IARU policy. The Regional organisations also conduct Conferences every three years, are responsible for representing the amateur service to their regional organisations (the APT in Region 3), and to an extent are the link between the member societies and the IARU.

There are today 30 member societies of IARU Region 3. Each must be a member of the IARU.

One has many members, the Japan Amateur Radio League, currently around 78,000 members.

Then there are a number of medium sized societies such as KARL (Korea) with around 8,000 members, the WIA with around 4,000 members, NZART (New Zealand) with around 2,000 members and CTARL (Chinese Taipei) with around 1,200 members.

Then there are much smaller societies, such as ARSI (India) with around 500 members, RAST (Thailand) with around 500 members, HARTS (Hong Kong) 239 members, SARTS (Singapore) with around 50 members, RSSL (Sri Lanka) around 60 members, ARM (Macau) around 60 members, BARL (Bangladesh) some 35 members, VARC (Vietnam) some 26 members, VARS (Vanuatu) some 10 members and PIARA (Pitcairn Island) with 9 members.

In addition, two of the world's most influential societies, ARRL (USA) and RSGB (UK) are members and participate for their members in the Region (for example, the USA possessions in the Pacific).

The list is not complete, but gives an idea of the geographic spread and spread of size of the member societies. JARL is a large amateur radio society by any standard but many national amateur radio societies have around the same number of members (or indeed fewer members) than the usual local Australian radio club.

Among the clubs not mentioned above are some that are currently un-financial, often, as in the case of ORARI (Indonesia) for the very good reason that the Region's dues are expressed in US dollars, and the Indonesian currency has fallen in recent times, making the US dollar unbelievably expensive.

Therefore, the Region has a wide spread, in terms of geography and in terms of the number of amateurs in a country.

The WIA pays a fee to the Region 3 organisation, currently 71 US cents per member. At the exchange rate when this was written, that is 93 Australian cents. In other words, nearly one dollar from every member's subscription goes to Region 3.

That is only part of the cost. The cost of participating in a Regional Conference every three years may be quite high, depending on where it is held.

Why does the IARU Region 3 organisation matter to the WIA?

It is through the Regional organisations that the IARU member societies can have input to the IARU. There is no global assembly of the IARU, in which member societies may participate. Policy is developed by the IARU Administrative Council, comprised of the President, Vice President and Secretary of the IARU and two representatives of each of the three Regional organisations.

An example of the sort of policy issues that may be addressed is the possibility that at an appropriate time it may be possible to seek a secondary allocation for the amateur service around 5 MHz.

In addition to the formulation of policy, the Regional organisations undertake other activities.

Since the changes to Article 25 of the ITU Radio Regulations made by the World Radiocommunicatiuons Conference in Geneva in 2003, the underpinning international regulation of the amateur services, a new and important emphasis on international emergency communication by the amateur service has existed.

It is through forums such as the IARU Region 3 Conference that structures and plans to address this responsibility may be developed.

It is also a forum where experiences may be exchanged.

One example is that it is clear that many societies are concerned at the diminishing number of amateurs and the need to attract new amateurs. The WIA is one of the few societies that can talk of growing numbers of amateurs and an upward trend in membership. The WIA cannot say that what has been done in Australia in the development of an entry level licence will provide a solution for any other country. However, it can share its experiences, and leave it to others to see if what has happened in this country is of any assistance to another country.

Then, of course, it is the forum where band plans are developed, and the organisation through which national societies may work together to attempt to remove intruders.

I have no doubt that the WIA's involvement in the IARU Region 3 is inescapable.

But that also means that we can say that IARU Region 3 must be effective and that it and the IARU generally must make sure that its member societies and their members know what it is doing.

Whether or not the present structure should be retained, changed or replaced, is a matter for the future. In the short run, we must make what we have work as well as we can.

In the longer run, we must ask the question is what we have now the best for the future. In addition, through the Administrative Council of the IARU and a working group appointed by it, that is a question that is already being asked.

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WIA News

13th IARU Region 3 Conference in India

The International Amateur Radio Union Region 3 held the 13th Regional Conference from 7 to 11 August 2006 in Bangalore, India.

The Amateur Radio Society of India was the host society, and the WIA was represented by its President, Michael Owen VK3KI, and Jim Linton VK3PC.

Because of the way the work of the conference is divided into two areas, with two Working Groups working in parallel, one dealing with policy items, the other with operational and technical items, each representative is fully committed.

Jim Linton was Chairman of the Editorial Committee and a member of the Finance Committee, and Michael was Chairman of a third Working Group dealing with constitutional matters and the future of the IARU.

Thirteen IARU national member societies participated in the Conference.

The many challenges facing amateur radio and the opportunities for the future were actively discussed.

Some 70 documents were considered, covering a wide range of topics including the Foundation Licence, BPL, intruders, reciprocal and visiting licensing, new frequency allocations perhaps around 5 MHz and emergency communications.

The overriding concern of the conference was the declining numbers of radio amateurs in most countries, and how that situation may be addressed. Another key theme in the wake of a series of natural disasters was preparation by radio amateurs for their role in providing emergency communications.

The WIA paper on the Australian Foundation Licence, presented by Michael Owen, attracted strong interest from many, who asked the WIA delegates questions and commented very favourably on the WIA Foundation Licence Manual. Each delegation was presented with at least one copy.

The Conference formally resolved as follows: "That IARU Region 3 member societies take note of the introduction of the WIA Foundation licence, building on the success of the RSGB model, as a way to encourage newcomers into the Amateur Radio Service."

There is no doubt that the Australian experience attracted real interest, as the WIA was one of the few societies talking of growing numbers of amateurs and growing membership.

The issue of emergency communications was also discussed at length. At least three radio societies announced that they were setting up their first amateur radio emergency service organisations and were aiming to prepare better for disasters.

Leading the discussion was Chairman of the IARU Region 3 Emergency Communications Committee, Jim Linton. Jim was confirmed in that position by the Conference.

The Conference resolved to encourage radio societies to have their administrations fully implement the changes to Article 25 of the ITU Radio Regulation in respect of third party traffic and preparation for emergency communications.

It also resolved to encourage the societies to participate in a regional simulated emergency test in the future to explore the potential for inter-country networking in times of emergencies.

The WIA paper on the new proposed Australian 40 metre band attracted interest as a way forward as the availability of 7.1 to 7.2 MHz spreads across the region.

The WIA's approach to the issue of BPL also attracted interest. The JARL reported that it has been working with its administration on in-house BPL to keep emissions low and requiring filters to stop them radiating from power lines. The ARRL reported a very low number of BPL consumers across the US.

Intruders on the amateur bands were of serious concern to many societies. These included over the horizon radar systems and broadcasters. The Conference resolved to escalate efforts to have them stopped.

An important matter discussed was raised by the IARU Vice President, Tim Ellam VE6SH, concerning the future of the IARU.

The Region 3 Constitution was amended, primarily to make amendment more difficult and requiring notice, as proposed by the WIA.

Four of the five current directors did not seek re-election, namely Park Young-Soon HL1IFM, K.C. Selvadurai 9V1UV, Yoshiji Sekido JJ1OEY and R. Ramachandra VU2RCR.

As there were five nominations for the five positions, the following were declared elected:

Michael Owen VK3KI, who was also elected Chairman of Directors, Shizuo Endo JE1MUI, Gopal Madhavan VU2GMN, Peter Lake ZL2AZ and Professor Rhee-Joong Guen HL1AQQ.

Keigo Komuro JA1KAB continues as Secretary of the Region.

Keith Malcolm VK1ZKM was confirmed by the Conference as the Region 3 EMR Coordinator.

The 14th conference, in 2009, will be hosted by NZART and held in Christchurch.

The WIA Presents at the IIR conference - BPL in Australia

WIA Director Phil Wait VK2DKN delivered a presentation entitled "BPL and Amateur Radio" to the IIR conference "BPL in Australia" held in Sydney on 26 and 27 July. The WIA was invited to present their concerns about the interference potential of BPL to HF radiocommunications.

The conference was attended by management level decision makers from the power and utility industries, the Department of Defence, the regulator - ACMA, ISPs, and others interested in providing access and in-house BPL services, automatic meter reading (AMR), and demand side power management such as dynamic electricity pricing and load shedding.

The WIA presentation was very well received, and has increased the awareness of amateur radio and the importance of avoiding interference to radiocommunications services, including amateur radio.

Growth for amateurs and for the WIA

July was a big month for new Radio Amateurs.

The WIA Examination Service processed 90 Foundation licence assessments, 84 of the 90 were competent, 23 Standard assessments with 22 competent and six Advanced assessments, 3 competent.

Around 70% of the Standard and Advanced grade assessments were upgrades from the Foundation licence and

combined this gave us just over 90 new amateurs for the month.

The WIA examination service has processed 870 successful Foundation licence assessments since the first examination in late October 2005. There now seems little doubt that the WIA examination service will process more than 1,000 successful candidates in the first full year of assessing Foundation licence candidates.

Feedback from a growing number of clubs indicates that club membership and meeting attendance is growing. July was a record month for the WIA, with 77 new members for the month.

Since the restructure to a national WIA in May 2004, amateur numbers have grown by around 4% and WIA membership by 14%.

A new 28 MHz calling frequency

Following consultation with Australian 28 MHz operators, the WIA has nominated a new suggested 28 MHz national calling frequency of 28390 kHz.

WIA in Western Australia

WIA President, Michael Owen VK3KI visited Perth to attend a series of meetings with local clubs, in a program organised by WIA director Robyn Edwards VK6XRE.

On Sunday 23 July, there was a lunchtime BBQ meeting of the West Australian Repeater Group (WARG), on Monday evening there was a meeting of the WA VHF Group and on Tuesday, at their new premises, the Northern Corridor Radio Group.

The message to each club was the same. The President outlined recent developments, particularly in relation to the new amateur licence structure and the WIA's qualification of amateurs relying on WIA accredited and registered WIA Assessors.

He stressed that the attraction, training and qualification of new amateurs, particularly Foundation licensees, depended on a partnership between the clubs and the WIA, as each could do what the other could not do. The relationship must be seen as synergistic, not competitive, and the WIA particularly relied on the support of the clubs in attracting new members.

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Worthy recruits, with a flare for performing unique tasks

Amateur Radio Remembrance Day Contest 2006 *Opening Speech* by Horrie Young VK2AMZ

This year the speaker was to be Mr. Horrie Young VK2AMZ. Horrie has been a speaker on this broadcast at times previously, and has always been succinct in his comments.

Sadly, this year Horrie became ill after preparing and sending his text to WIA and before the recording of the speech. Thus, another amateur, on Horrie's behalf, did the recording.

In thanking Horrie for his efforts this year, we wish him a good recovery and speedy return to the amateur bands.

The text of Horrie's speech follows:

Editor and Ian Godsil VK3JS

How fortunate that the Government had had the foresight to approve the Amateur Service, thus being assured of a nucleus of highly skilled and trained communicators who required only minimal training to be fully absorbed into the armed forces

September 1939 saw a major movement in the Australian Amateur Service. Hostilities had been declared with Germany and in compliance with a direction from the then Wireless Branch of the Postmaster-General's Department, amateurs were required to pack up their radio equipment and seal it for the duration of the conflict. At the same time many amateurs changed from civilian dress to the uniforms of the Navy, Army and Air Force.

It was a period of considerable excitement, for apart from those who had enrolled in the Reserve Forces pre-war, few had experienced Service life and all that goes with it.

How fortunate was the Government of the day that it had had the foresight to approve the Amateur Service, while many other foreign Administrations had declined to do so – regarding radio amateurs with a degree of suspicion and even worse. The Australian Government was thus assured of a nucleus of highly skilled and trained communicators who required only minimal training to be fully absorbed into the armed forces.

The ubiquitous amateur soon proved to be a most worthy recruit, often quickly moving through the ranks to positions of responsibility, and seemed to have a flare for performing unique tasks. Yes, the amateurs seemed to be everywhere – serving on warships on the high seas in dangerous convoys, minesweeping etc, flying as air-crew and improvising when need be, with the technical equipment of the day, which at times left quite a bit to be desired.

Some of their lesser known exploits included the dangerous task of serving as "stay behind parties" in territory occupied by the enemy, while volunteering to work with Services Reconnaissance Department and Z Special unit -- and who could forget the vital role played by the Coast Watchers of 'M' Force?

Sadly, the work of Special Force Operatives entailed tremendous risks, often working out of uniform and even employing the enemy's flag when it suited them. Capture meant instant execution and as a consequence many of these brave men lost their lives. It is thought that casualties in this branch of the Armed Forces were as high as thirty percent.

So it is by means of this important Contest that amateurs of today are accorded the opportunity of paying their respects to these gallant Australians who paid the supreme sacrifice, not only those of World War II, but also those who served in subsequent conflicts such as Korea, Vietnam and later peace-keeping groups. We also acknowledge that their sacrifice has in no small measure contributed significantly to the continuance of the Amateur Service as we know it today.

At the going down of the sun...
we will remember them

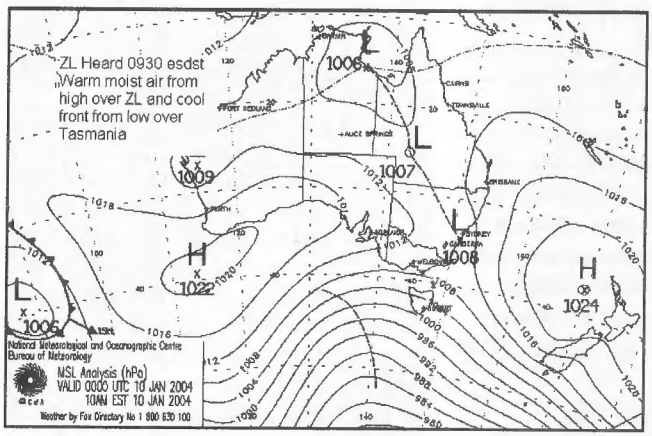
ar

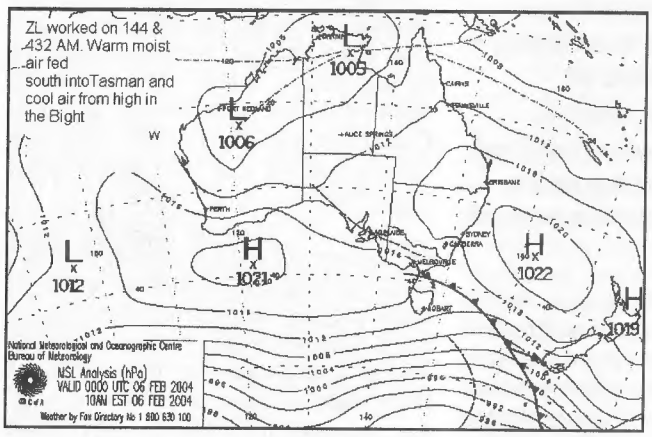
6 metre propagation

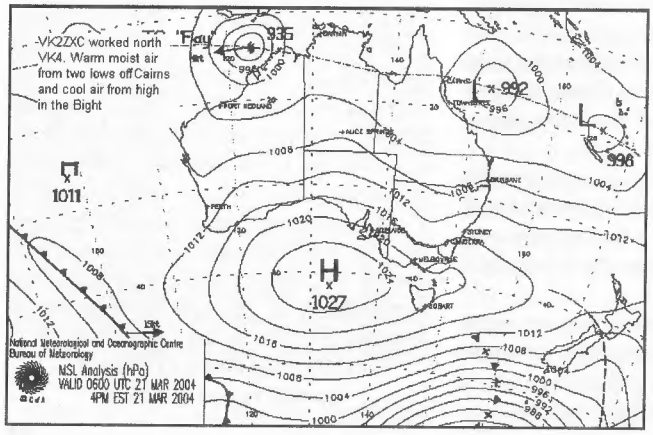
Mick Hort VK2BZE
mickh1@exemail.com.au

Like many before, I had pondered the link between weather patterns and VHF propagation. Following the intense high-pressure cells and other ideas floating around did not reveal anything remotely repeatable. A brief following of Hepburn charts found them useless on 6 metres. I have not followed other VHF bands on Hepburn.

Some two years ago, I remembered a massive 2-metre opening to ZL and went digging through old logbooks to find it.







Shortly after finding the log details, a kind gentleman at the Bureau of Meteorology sent me the analysis charts for the 8th and 9th of January 1979, covering this opening in which many contacts were made on 2 metres FM simplex and via ZL repeaters for two days. These maps revealed nothing remarkable at first, having a large, moderate high-pressure cell extending west from ZL and a cold front in the lower Tasman. I scratched my head and put the maps aside for a long time, until one day I noticed on the maps an intense low cell north of ZL and east of Rockhampton. This was pushing lots of warm moist air from the tropics into the air stream heading down the Tasman from the high. This gave me the seed of an idea and I decided to study 6 metres since openings are much more prolific.

After a few months, it became obvious to me that every time some basic factors came together, there was propagation to ZL, either contacts or varying levels of ZL TV. These factors are a source of warm air, a source of cold air, a source of moisture, and input from the sun.

Since then I have kept a record of as many openings as I could using my own observation and input from other local amateurs. These date from 23 November 2003, being a copy of the daily analysis charts and, later, the cloud maps as well, and a brief notepad file on the happenings on that day which I can email to anyone interested in following this.

Having followed this for some two years, the hit rate for ZL TV (45 MHz) is nearly 100%. Even with the low numbers of ZL 6-metre stations, myself and other locals have had a high contact rate to ZL as well as other areas in Australia. The mechanism has been discussed repeatedly by myself and John VK2BHO, who has been an observer and sounding board during this exercise. I do not purport to know the answer as to why it works, only that it is a ducting mechanism whose refractive properties are greatly enhanced by the moisture content of the air and thermal input from the sun.

This process is described very well in the RSGB VHF UHF Manual 1969, Chapters 2.1 to 2.8. The key factor being that I think the ducts are at very similar heights and can link. They also vary in height giving rise to different propagation for 52, 144 and 432 MHz.

These ducts have been followed as they move from Adelaide to Tasmania by looking for beacons in the path as the weather front moves eastward, and from the southern tip of ZL to the northern tip of ZL by following the TV stations as a front moves up the Tasman. Of late, I have been using Digipan to identify the ZL TV stations. This way you can see which part of ZL the duct is favouring. The ducting is not limited to large expanses of water but can, and does, occur with the heating and cooling of the land. This usually is noticed as coastal 2-metre openings but, in fact, can give long distance openings on 6 metres, one of which we worked to VK6 on the evening of 7th December 2005.

The observations are too many to list but I am happy to email anyone who

continued on page 9

The Slim Jim revisited

Bill Sinclair VK2ZCV

The Slim Jim antenna was developed by Fred Judd (SK) and the details first published in *Practical Wireless* and, subsequently, in *Out of Thin Air* and *More Out of Thin Air*. The name comes from its slender construction and the use of the "J" type Integrated Matching stub (JIM) that feeds the base. The antenna is basically an end fed, vertically operated, folded dipole and has been duplicated in various forms, and for different frequencies, throughout the world.

The version to be described came about after some discussions on our local Wednesday night net. It is an ideal and relatively cheap (approx $20 at 18 December 2005) antenna to build using only hand tools. All parts are available locally and none are specialised. See Photo 1 for the complete antenna.

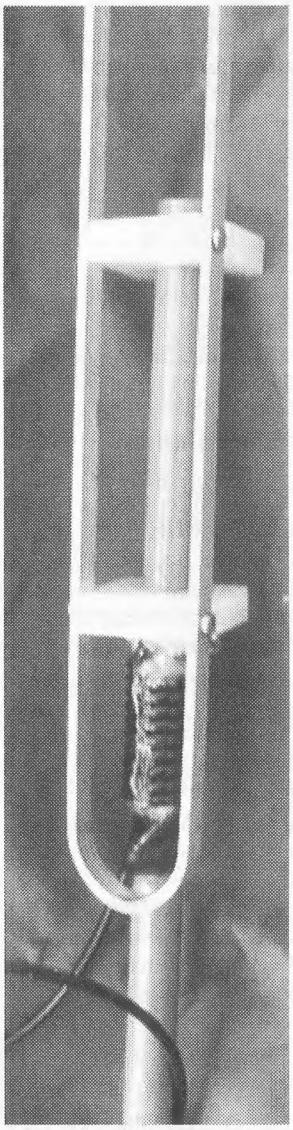


Photo 1 - Feed point and choke balun.

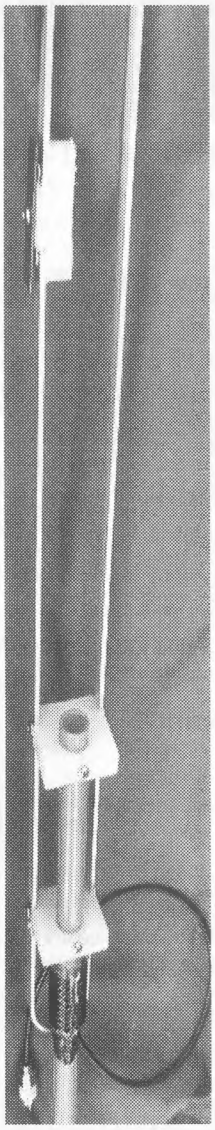


Photo 2 - Tuning and feed point.

From information gleaned from various sources the following deductions were made. The original design frequency was 145 MHz, so this version has been scaled to 146.5 MHz.

It is advisable to feed the antenna with a balanced feed, therefore a "choke" balun has been incorporated (the cheapest effective method to achieve balance - see Photo 3).

Some form of tuning the antenna to resonance will give some latitude in construction errors. The method used here is taken from Fred Judd's Ultra Slim Jim and consists of a simple capacitor at the high impedance points. It consists of a strip of single-sided fibreglass printed circuit board with the copper side out (see Photo 2).

A more accurate method of locating the correct feed point without multiple holes, or a slot cut in the elements was deemed necessary. This was achieved after assembly of all except the feed point holes in the bar. It was done by sliding the feed point insulator, with feed coax attached and in contact with the bar, up or down to obtain the match (100 mm. in this case). Holes were then drilled in the bar.

Construction should be evident from the photos except for the dimensions. Lay the flat bar on your working surface and, from one end, which will be the top of the "J", mark the first bend centre at 487mm and the second bend centre at 1990 mm.

NOTE that both measurements are from the same starting point.

The two bends may be made by clamping a piece of pipe approximately 40 mm in diameter vertically in a vice, laying the bar horizontally on the vice top, and clamping the bar to the pipe with vice grips or "G" clamp, then pulling both ends around the pipe. If all has gone to plan there should be a gap of 15 mm between the free adjacent ends.

From the longer of these ends cut off 10 mm to make a gap of 25 mm. Measure 490 mm along the longer side from the gap and mount the 43 mm x 12 mm x 12 mm piece of cutting board, which acts as a stiffener at a low impedance point. Notch the 25 mm x 50 mm x 12 mm cutting board approximately 6 mm or enough that the piece of PCB material when mounted will clear the mounting screws and attach at the gap. The PCB may also be mounted to the centre of this insulator at this time.

Clamp the two 50 mm x 45 mm x 12 mm pieces of board together and align carefully. Along the 50 mm side, at 25 mm and in 20 mm, drill a 20 mm hole that is a sliding fit on the

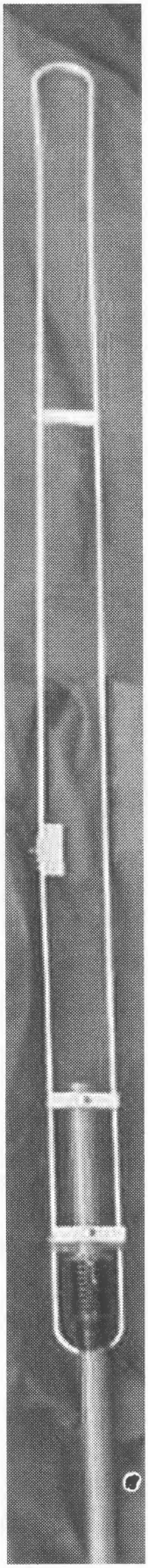


Photo 3 - Complete antenna

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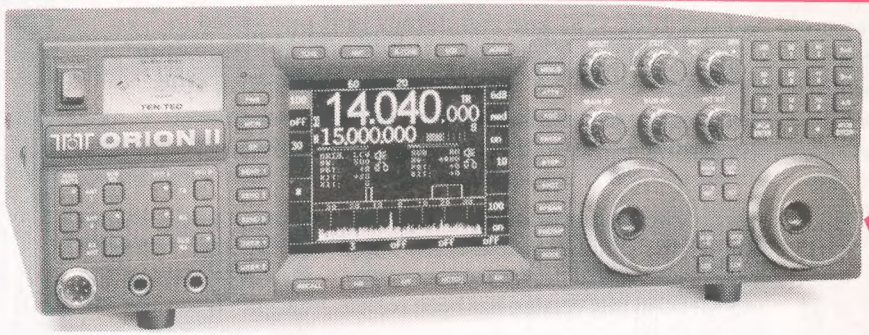

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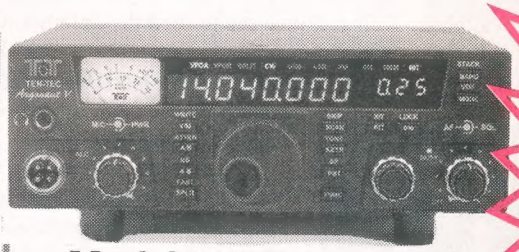

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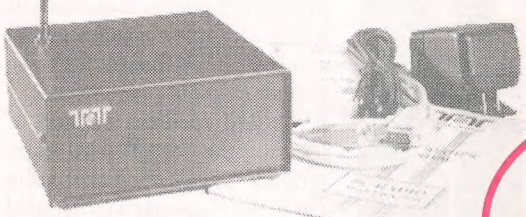

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conduit. On the opposite face notch each side 3 mm as seen in Photos 2 and 3.

Assemble the coax plug on to the coax and prepare the ends for solder lugs. At 170 mm from one end of the piece of conduit, wind and secure 10 turns of the coax (refer Photos 2 and 3). Slide both pieces of prepared cutting board on to the conduit and attach, with self-tapping screws, the TOP piece ONLY at 20 mm from the top of the conduit and 235 mm from the inside of the bottom of the "J".

Using tails as short as possible attach, with solder lugs and self-tapping screws, the coax to remaining block so that the heads of the screws can make contact with the "J" at about 100 mm from the bottom. Adjust the position of the tuning PCB and this block for best match. Attach the coax permanently after drilling holes in the aluminium at this point. Seal all the connections and secure the blocks to the conduit.

The antenna is now complete. For best operation, mount outside as high as possible, and in the clear, using low loss coax. It may be coated with TECTAL 151 for weather and UV protection. The 2:1 VSWR points of the prototype occur 15 MHz apart.

Parts list

- 3 m 12 mm x 3 mm aluminium bar.
- 11 S/Steel self-tapping screws, pan 8G x 12 mm.
- 600 mm x 20 mm PVC conduit.
- 2 of 50 mm x 45 mm x 12 mm kitchen cutting board.
- 1 of 43 mm x 12 mm x 12 mm kitchen cutting board.
- 1 of 25 mm x 50 mm x 12 mm kitchen cutting board.
- 1 wavelength coax @ 2 m = 1354 mm + 60 mm for tails.
- 1 of 12 mm x 60 mm piece single sided fibreglass PCB.
- 1 of coax plug or socket to suit your gear.
- 2 of solder lugs with 4 mm hole.

ar

6 metre propagation *continued*

has questions on the maps and their interpretation.

As a double blind, observations of many days when no fronts were showing were studied and on none of these days did anything but brief meteor or aircraft enhancement occur. Sporadic E never came to the rescue to save the day. This phenomenon goes on in winter as well, and contacts or strong ZL TV signals have been observed every month of the last winter.

The text file is too big for this brief introduction, and there are many weather analysis and cloud maps available to anyone sending an email to the above address. If there is enough interest, I will write another article with maps and comments.

A version of this article has been previously published as "6 metre propagation and weather patterns" Break-In, *p17, Jan/Feb 2006.*

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The secret spectrum - clandestine broadcasting

Dr Hank Prunckun, VK5JAZ

No, the "secret spectrum" isn't the new name for a government regulatory agency, but a reference to the world of secret radio transmissions. In this article, Dr Hank Prunckun looks at one aspect of this shadowy world, that is, clandestine broadcasting.

The "war on terror" has highlighted how agents of, not opposition government intelligence services, but radical political groups, are operating in our midst. Even though these groups spend their entire time doing their work in secret, the electro-magnetic spectrum is a rich source of potential information about some of these secret organisations. Like a parallel universe, the radio spectrum is full of transmissions which can be part of elaborate psychological operations or "psy-ops."

Even though this is a secret world, it can, and is, "penetrated" all the time, not by intelligence organisations sent to track down these radical groups, but by radio amateurs, shortwave listeners, and just about anyone with a radio receiver. Really! Anyone with a radio has the potential to open up this world. Let's have a look at the most high-profile form of secret radio transmissions - clandestine broadcasting.

Clandestine Broadcasting

What distinguishes clandestine broadcasting from other forms of broadcasting are four factors.

Clandestine broadcasting is political in nature; its operations employ some degree of deception; it is political; and they are extra-legal (that doesn't mean that their solicitors charge more - I'll explain this term in a minute).

For a radio station to be a true clandestine operation each of these elements must be present but of course, will vary in degree with the individual station.

The first element - political in nature - means that the station wants to bring about change or action. Such stations are likely to appear as a result of some civil unrest in the country that is its "target" (or perhaps in another country outside its borders that is sympathetic to the group's cause).

The second thing that makes a clandestine station is that it operates under a veil of deception. Transmitter sites and studios are never revealed. For instance, you'd never hear, "...this is the Voice of the Political Underdog, operating from its studio in exile here in the Strzelecki Desert..."). In fact, some clandestine stations have even broadcast false locations to throw any secret spectrum sleuth off their track.

Thirdly, clandestine broadcasts are fleeting phenomena of the airwaves. As their sole purpose is to drive a political message, clandestine stations appear and vanish as quickly as the political "trouble" they are addressing has passed (or the "trouble" locates them and destroys their radio equipment and throws them in jail...). A clandestine station is not a stable operation.

Finally, clandestine stations are extra-legal. This means that they operate in violation of national and international laws. It is common for them to utilise frequencies outside those that are internationally allocated for commercial broadcasting. In addition to ignoring these "band plans," these stations often encourage illegal activities in the country to which they beam their broadcast. This usually takes the form of encouraging opposition to, and struggle against, the government in power (or in some situations, the dictator, junta, or military ruler that might have installed itself in the seat of government).

Even though this is a secret world, it can, and is, "penetrated" all the time, not by intelligence organisations sent to track down these radical groups, but by radio amateurs, shortwave listeners, and just about anyone with a radio receiver. Really! Anyone with a radio has the potential to open up this world.

Now that we have a picture of what constitutes a clandestine station, the next question is, "why do they broadcast?" The answer is simple. A clandestine broadcasting station can easily demonstrate its supremacy over other communication media in several respects. It is immediate and it is universal.

It is immediate in the sense that there is no time lag between announcement and reception of the message; and it is universal because it cannot be easily stopped at national borders. Telephone lines, including internet links and other land-based telecommunication systems, can be cut or interrupted, but radio can get through regardless. It also has the attraction of being, arguably, the most popular communication medium in the world.

Finally, clandestine broadcasting eliminates an otherwise impossible logistical problem that would be encountered if, say, the print media were used. Can you visualise this happening: a group of underground operatives using a DC-3 Dakota to air-drop leaflets over Sydney, Melbourne, and Canberra. Not likely! However, a broadcast via a satellite to a large "footprint" of the earth's surface is not only possible, it happens every day.

As a tool for political manipulation, broadcasting has an enormous potential to influence public opinion.

For example, in August 1997 news headlines carried the story that it was the first time the Bosnian Serb republic's electronic media broadcasts were not under the control of strongman Radovan

Karadiz. The president of the newly created Bosnian Serb sub-state, Ms Biljana Plavisc, was credited with now having a "powerful weapon." The media report stated, "NATO can protect Ms Plavsic from physical harm but cannot shape public opinion the way television [the electronic media] can. Bosnian Serbs, who mostly live in rural areas and are poorly educated, generally believe what they see on TV [and hear on the radio.] (Savic, Misha, The Advertiser, 26 Aug 1997: p14)."

On the other hand, Radio Australia prides itself on unbiased and objective reporting of current and political events around the world. It is widely acknowledged that stations like Radio Australia and the BBC counter the "disinformation" propagated by these clandestine broadcasters.

As such, people in many countries, especially third-world countries where the literacy rate is low, seek out these reputable and respected broadcasts. Australian stations are arguably amongst some of the world's best for objective reporting.

Current clandestine radio activity

To describe the current clandestine broadcasting situation would be difficult, not because of any technical radio related reason but because the world's political landscape changes so rapidly that any attempt to catalogue the stations, times of broadcast and their frequencies, would result in an out-of-date list as soon as it is published.

This is because clandestine radio is the gathering of several worlds under the umbrella of media broadcasts - politics, international relations, and most importantly, espionage.

Over the decades there have been numerous clandestine stations that operated in different parts of the world and they have come-and-gone from the radio spectrum as abruptly as the politics that surround their issues changed.

For instance, at the time of this writing, a London-based group with alleged sympathies to a branch of al-Qaeda, abruptly ceased its satellite radio broadcasts days after the 7th July 2005 terrorists attacks on London's underground trains and bus facilities.

Previously, clandestine stations in our region have operated from Papua New Guinea, East Timor, and Vanuatu.

It is fair to say that, where one finds political unrest and upheaval, one will find clandestine broadcasting. If the country's target listening population is less developed and ill educated, then the likelihood that clandestine broadcasting will be heard increases dramatically.

In the days before the internet, the only way to keep track of clandestine broadcasters was to join a shortwave listening club or subscribe to a publication that monitored these broadcasts.

However, there are now several websites that specialise in monitoring developments. The website considered by most as the premier in keeping tabs on what's happening in this part of the secret spectrum is www.clandestineradio.com.

This website features information about current clandestine stations and has archival information about "inactive" stations. It also has a section that lists the clandestine stations that are on the air at that time and the frequencies on which they are transmitting.

There is background information about the political stance of these stations, and more. It is worth a visit to this website. This website states that it is "...regularly used by radio monitors, academics and historians, journalists, and military and intelligence analysts to track 'psy-war' developments across the globe."

Summary

Because clandestine stations transmit their signals to the world at large, anyone with a radio receiver and a reasonable antenna can join in the political intrigue, along with the long list of intelligence agencies (friend and foe) that no doubt follow these broadcasts closely (and in the case of some countries, they may even sponsor them...). Good hunting!

ar

Dr Hank Prunckun is a research criminologist specialising in the study of trans-national crime — including espionage. In addition, he holds an advanced amateur radio operator's licence (VK5JAZ) and a marine VHF radio operator's licence. He has been awarded the DXCC by the Wireless Institute of Australia and has earned several awards for his work in shortwave listening.

ar

Silent Key

Chris Jones, VK2ZDD

It is with very great sadness that I have to tell you that Chris Jones, VK2ZDD, passed away early Friday 25 August 2006.

Chris was Secretary of the WIA, but more importantly the person whose vision and commitment made the WIA what it is today.

It was Chris who talked a group of amateurs in late 2003 into believing that a national WIA was a realistic and better option.

It was Chris who believed fervently that the organisation would grow if it delivered service and avoided conflict.

It was Chris who inspired so many to contribute in so many different ways.

It was Chris who contacted and organised the WIA Assessor training courses, who inspired so many people to make our new licence system really work.

It was Chris who made sure that somehow the WIA delivered many things that many wanted.

It was Chris who worked the phones like no one else I have ever met. It was Chris who involved so many people in so many things.

Chris Jones was a person who avoided conflict and loved to be surrounded by his many friends.

I extend our most sincere sympathy to his family and his many friends.

His passing is a very great loss to the Wireless Institute of Australia.

submitted by Robert Broomhead VK3KRB

A scalable solar regulator

Dale Hughes VK2DSH

Renewable energy has captured the attention of many people. The most accessible form at present is capturing energy directly from the sun and solar panels are now readily available at reasonable prices. Along with the solar panels, the user needs batteries to store the collected energy and a means of regulating the current into and out of the batteries (there are grid connected systems that convert the collected power directly to 240 VAC 50 Hz for resale, but this is outside the scope of this article). This article covers the design and construction of a regulator that can be scaled to any required capacity.

Many people might wonder why not just purchase a suitable regulator? They are readily available and are not expensive. However, designing and building a system offers the advantage of being able to build something that suits the needs of the user and, perhaps more importantly, offers the chance of learning new ideas and techniques – and that is one of the great things about our hobby!

In this case, there is opportunity to learn about using high power field effect transistors (FETs) to control significant amounts of power.

The system I will describe uses components that are easily sourced, either new through the usual merchants, or salvaged from switch-mode power supplies or other junk electronic devices. This design does two things:

- Controls the charge current into the batteries from the solar panels by means of sensing the battery terminal voltage.
- Disconnects the load from the battery if the battery voltage drops to an unsafe level due to charge failure.

Circuit description

For long-term stability of the regulator voltage set points, a temperature stable reference voltage is required and this is provided by U3. The device used is an LM336-5, a 5.00 V reference diode, the output of which is buffered by a voltage follower U2b. The reference voltage is then connected to two operational amplifiers (U2a and U4) connected as voltage comparators. U2a has two inputs; the 5.00 V reference and the battery voltage via R4, R5 and VR1. When the sampled battery voltage on the wiper of VR1 falls below 5.00 V, the output of U2a falls to a value that is close to ground, turning transistor Q1 off, allowing current from the solar cells to flow into the batteries (and load).

Transistor Q1 is configured to act as a switch that is either completely open circuit or short circuit. When the battery voltage reaches the required level, the output of U2a swings to approximately 11 V, turning Q1 on and shunting the charge current away from the batteries. Diode D1 prevents the batteries from discharging through the same path.

Positive feedback around U2a by means of R3 speeds up the switching action of U2a and provides a useful amount of hysteresis so that rapid on-off switching of the charge current is avoided. With the component values shown, the hysteresis is approximately 2 V, so that if the switch-off point is 27 V, the battery voltage has to fall to 25 V before charging recommences. Increasing the value of R3 will decrease the amount of hysteresis; for example, if R3 is 680 kΩ the hysteresis is approximately 0.5 V.

Note that it is important that Q1 does not enter a linear region; it must be either 'hard' on or off otherwise it will quite likely be destroyed due to exceeding the safe operating region of the device.

The shunt connection of Q1 might be questioned, but as the solar panels have a fairly high internal resistance and approximate a current source, it seems that shorting their output causes no harm (the same configuration is used in a number of commercial regulators). When the system is working correctly and the input is being shunted, Q1 dissipates very little power. In my case, using two 80 W panels in series in full sunlight, the shunt current was 6 A and the voltage across the transistor Q1 was only 60 mV, giving a power dissipation of 0.36 W - not even warm to the touch. The other advantage (for me, at least) was that I could have common ground between the solar panels, the batteries and the load, thereby eliminating some potential problems.

As previously mentioned, batteries are generally required in renewable energy systems and they are often the most expensive part of the system – thus they should be protected against being excessively discharged. Transistors Q2 through Q5 and U5 form a 'high-side' switch which can turn the output voltage on, or off, as required. U5 is a small DC-DC converter (1 watt, 12 VDC galvanic isolated output) that is used to provide the gate-source voltage which switches the transistors on as they are enhancement-mode devices. U5 is powered by U4 which is configured as a comparator that senses the battery voltage via R8 and VR2. When the battery voltage falls to an unsafe level, U4 output swings low turning off U5 and Q2 through Q5. The parallel connection of U4a and U4b provides sufficient current capability to power U5.

During development of this system, I destroyed several regulator transistors. Even though power FETs are quite rugged, they can be easily destroyed if sufficient care is not taken. The 10 Ω resistor in each gate circuit is to prevent spurious oscillation of the devices and the resistors should be mounted as close to the transistor as possible. In the prototype the resistor was soldered to the gate lead and covered with a small piece of heat-shrink tubing.

Components D2, D5, D6, C1 and C5 help protect the regulator from externally induced transients (D2 is a 51 volt, 5-watt Zener diode).

The automatic charge control may be overridden by closing the 'Boost' switch, as this forces comparator U2a to the 'off' position. This facility is useful for 'boost' charging the batteries, but the facility should be used with care as it disables the charge regulator, possibly overcharging the batteries. Switch S3 controls the output high-side switch and can be used to override the low voltage cutout switch.

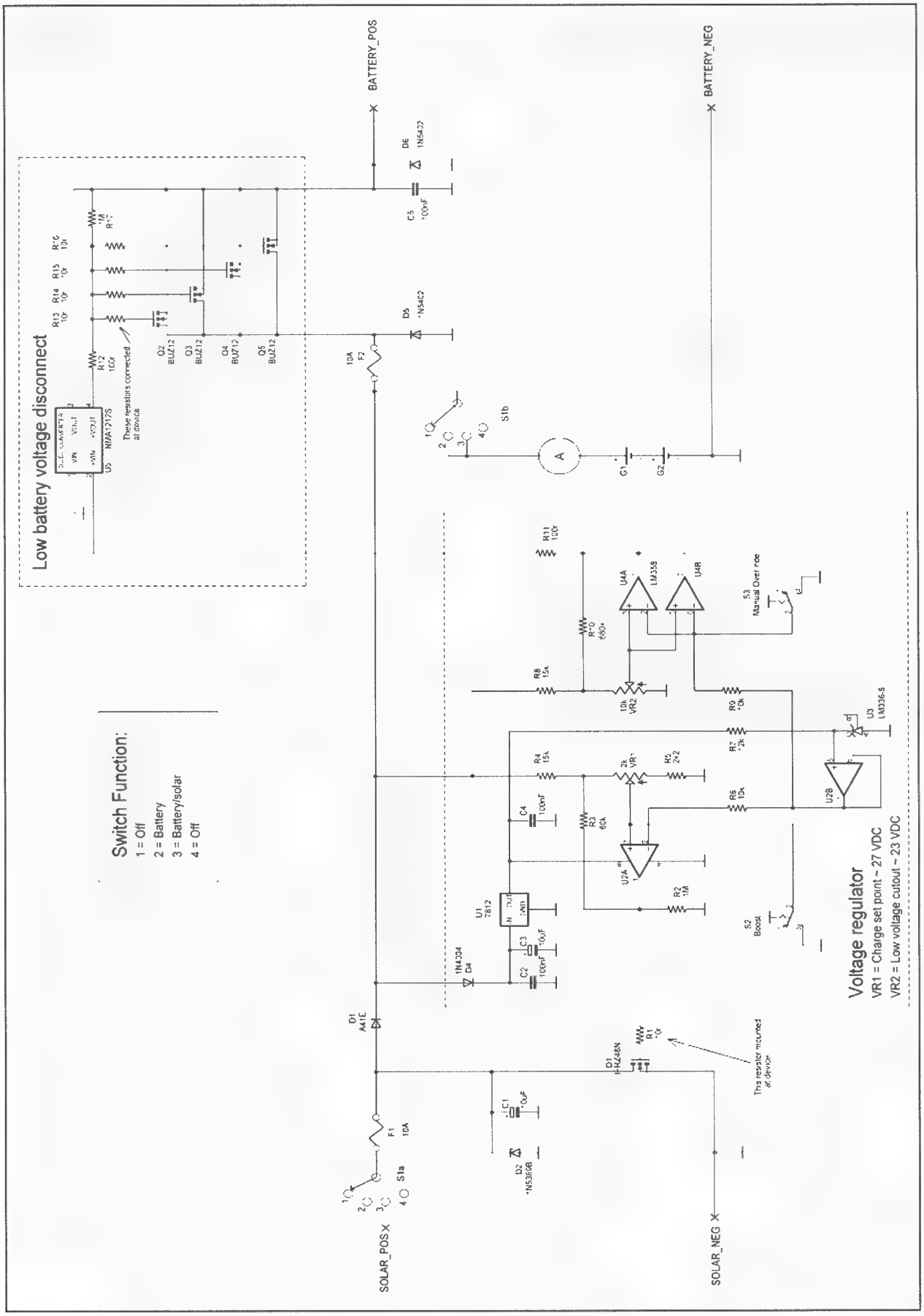

Figure 1 - Schematic diagram of the regulator and low voltage cutout.

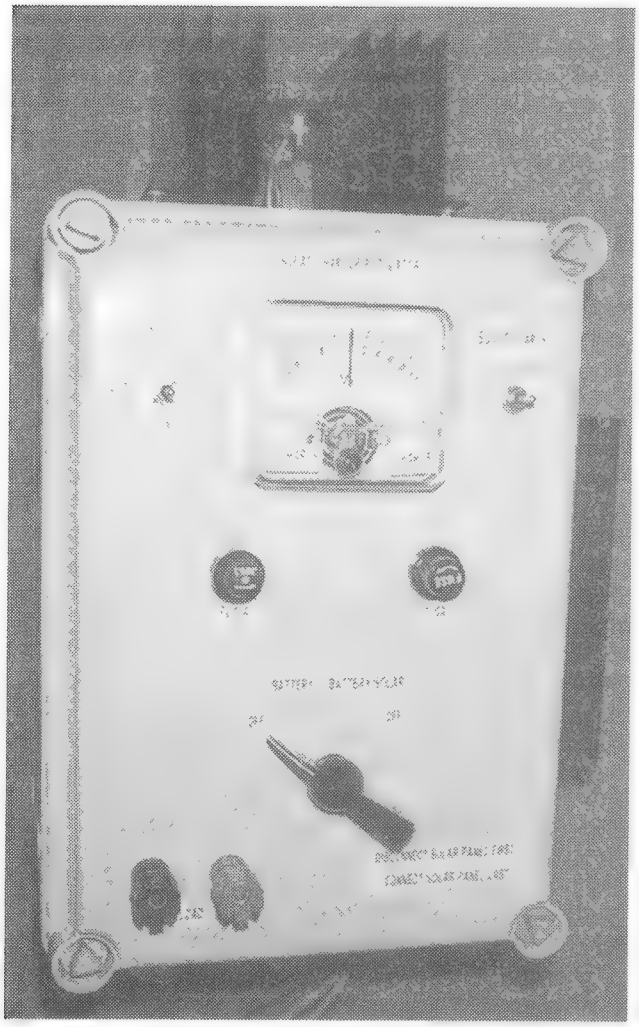

Photo 1 - Completed unit. The heat sinks are probably excessive, but they offered convenient mounting of the power FETs.

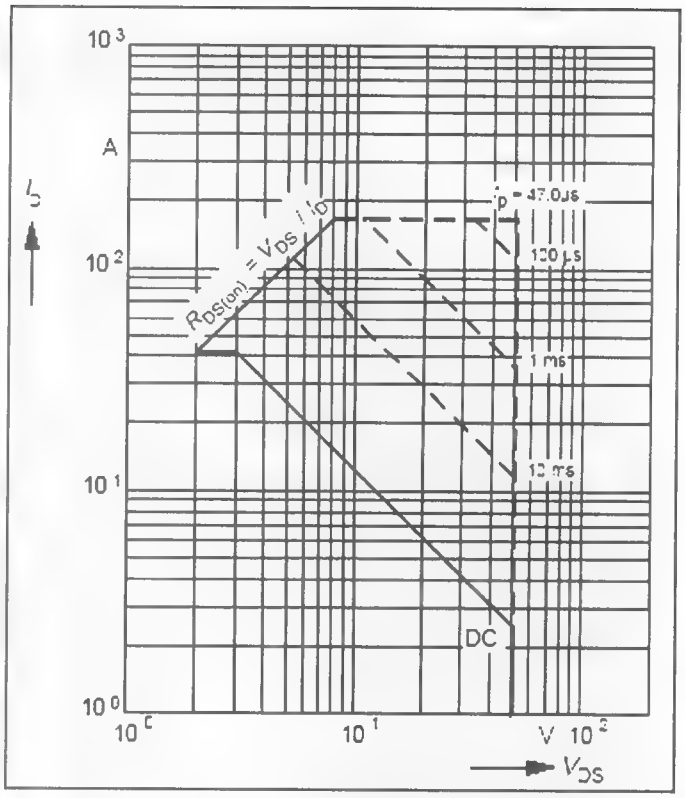

Figure 2 - Safe operating region for BUZ12 device.

In this design, I have included switching that allows the power to be supplied from the batteries alone, or allows the batteries to be charged while connected to the load. Rupture of the output fuse (F2) disconnects the load but keeps the connection between the solar panels and batteries intact. The switch needs to have sufficient current carrying capacity for the anticipated current flow. I used a large wafer switch with four switch sections paralleled. A centre-off toggle switch with a sufficient current rating could be used instead. Protective fuses and a centre-zero ammeter complete the circuit. The current consumption of the complete circuit is approximately 15 mA.

Expanding the system

Parallel connection of power FETs offers a convenient way of increasing their power handling capacity. Devices of the same type can be connected in parallel without taking special precautions as they have a positive temperature coefficient that forces proper current sharing. However, I did ensure that the wires connecting each device were all of the same length and gauge. When they are switching, the input capacitance needs to be charged or discharged, but after that, no power is required to maintain the device on or off. Thus, provided the devices can be switched quickly enough, as many as required may be connected in parallel to provide the regulating and load current capacity.

Many different FETs are available, the main factors to consider are:

- $R_{ds(on)}$: which should be as low as possible so that power dissipation is minimised.
- Maximum drain-source voltage (V_{ds}) rating should be at least 60 V for the regulator transistor (Q1) as the solar panel open circuit voltage can approach 40 V and transients can easily exceed this value; V_{ds} should be at least 40 V for Q2 through Q5.
- Maximum drain current rating (I_d) for Q1 should be sufficient for the short circuit current of the solar panels; and for Q2 through Q5 I_d should be sufficient to handle the maximum likely short circuit current before the load fuse ruptures.

The safe operating area for the BUZ12 devices is shown in Figure 2. It can be seen that the DC region current rating is significantly less than the 10 ms rating. For the BUZ12 devices used in the low voltage switch, the 10 ms current rating, with V_{ds} = 30 V, is 20 A per device, so the parallel connection of four devices should easily tolerate the full short circuit current before the fuse ruptures (I have tested this!). The shunt regulator device has a current rating of 30 amps at V_{ds} = 1 V, so the device should be easily capable of handing quite large solar arrays.

Diode D1 will also need to be changed to suit the requirements of the system. I used an A41 diode recovered from an old power supply. This device is stud mounted with a 50 V rating and a continuous current rating of 20 A. Systems with more solar panels will require a diode with a higher current rating.

Safety

There are a number of safety issues that should be considered:

- Always ensure that the solar panels are not connected to the load without batteries being connected, as the open-circuit voltage of the solar panels can be much higher than the usual system voltage. In my system (nominally 24 V), the open circuit voltage of the panels is nearly 40 V and this would be sufficient to damage equipment on the load side if the batteries are not connected – always connect the solar panels last and disconnect them first when installing or working on the system.
- In these types of systems, ALWAYS be aware that large batteries can supply very large amounts of current. Make sure that suitable fuses are installed and that connecting leads have sufficient current carrying capacity.
- Solar panels are often mounted at height, therefore use appropriate safe working procedures when installing or servicing panels that are mounted on roofs or posts.

Conclusion

A design for a simple regulator has been presented and the capability of the unit can be scaled to suit the user's needs. The components are readily available. I purchased Q1 from Futurelec (www.futurlec.com.au) and these devices could also be used in the low voltage cut-out switch. Futurelec has a good range of FETs, along with data sheets, and they offer a very useful internet purchasing facility. The DC-DC converter can be purchased new from Farnell (NMA1212S Cat No 330-796), and Jaycar also offers suitable devices. Other than noted already, there are no special construction requirements; the prototype was built on Vero-board in a surplus plastic enclosure.

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Over to You

Fuel economy

In relation to the VK1GH reply to Neville Chiver's article (pp. 19-21, May AR), I wish to make the following points regarding fuel economy:

1) Most people in Australia will do 90% of their driving around town, with the typical stop-start pattern.
2) Under these conditions, Neville's diesel golf will still be achieving approximately 5.9 L per 100 km. Personally, I am on my fourth diesel-powered vehicle and they all achieved exactly the same fuel consumption on a long trip as when driving around town.
3) What will a Calais be doing around town? Perhaps 14 L per 100 km?
4) 100 km is not a very long trip. The saving on a 1,000 km trip is approximately $144.
5) One of the services for a medium size Hyundai is around $750.

These represent a few more issues for one to consider.

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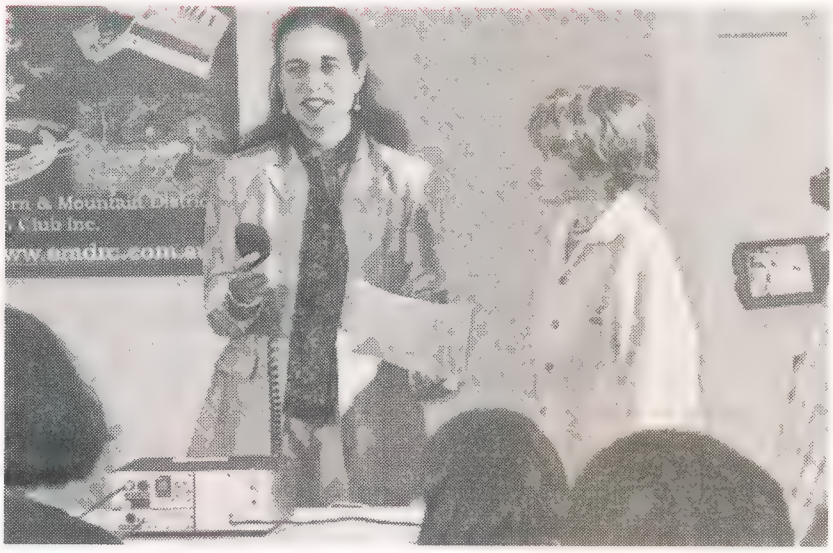
Aussie kids chat with the space station

ARISS talk to Briar Hill Primary School

North East Radio Group

Just how does a radio club get involved in participating in the international space program? Well, in our case the concept was initiated by one of our local Banyule city councillors, Jenny Mulholland, and swiftly followed through by the NERG.

The NERG (the North East Radio Group, in Melbourne's north eastern suburbs) had the use of facilities at Simpson Army Barracks in Watsonia until the atrocity of September 11, after which upgraded security initiatives prevented civilians from entering the base, leaving the NERG homeless. Our approach to Banyule council for help was heeded by Jenny who saw the possibility of an amateur radio club providing much needed alternative interests for youth in the local community, so with her help the NERG was provided with permanent use of an excellent hall in an ideal



Teacher Natalie Will rehearses questions with the students

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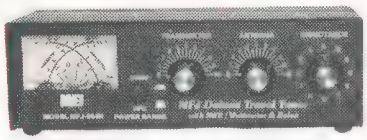

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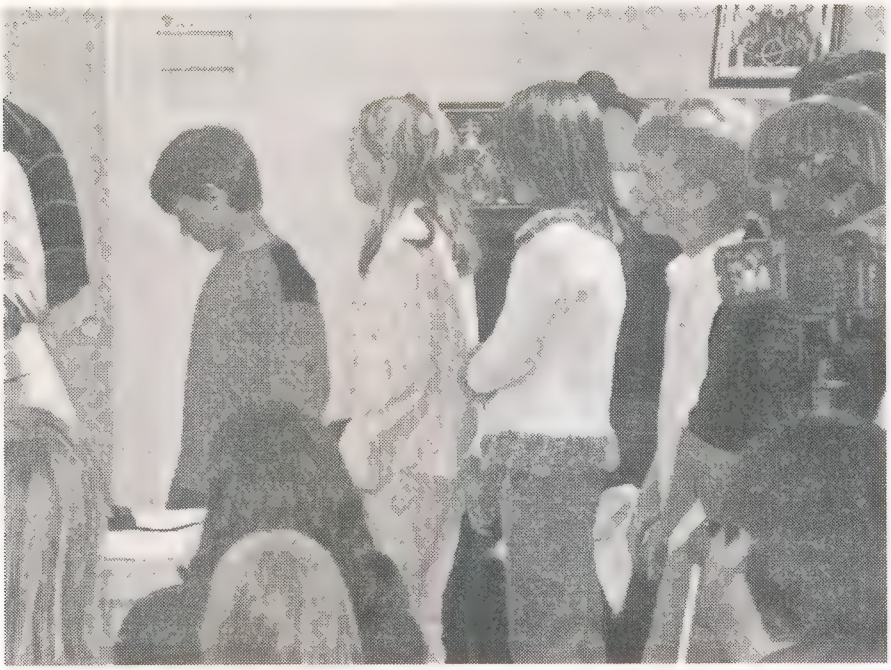

Students line up to talk to Bill McArthur, the ISS commander

hill top location.

In recompense, the NERG was asked to work with local youth groups, essentially by introducing them to all that amateur radio had to offer. To have Briar Hill Primary School students involved in the space program became an obvious choice, as they had earlier provided us with temporary accommodation, and had a very open and broad approach to their students' education, in no small way due to Principal Ross Dudgeon and staff member Natalie Will.

The NERG approached Australian ARISS Coordinator Tony Hutchison VK5ZAI in June 2005, seeking inclusion in the ARISS program, and then followed the normal routine of applying and addressing preliminary requirements. We could not believe our good fortune when, on January 31, Tony sent us a message offering a possible contact with the ISS in early March. We had anticipated several more months for preparation, but with the expert guidance from our mentor Tony VK5ZAI, all preparations went quickly and smoothly ahead.

In late February, Tony advised that the scheduled contact had been deferred and that they were working on providing another date. We were a little concerned as the time was drawing very close for the ARISS crew to return to earth, and contacts were rarely made during the last weeks of an expedition. But our fears dissipated when Tony came back to us with the offer of a contact in the last week in March, actually Friday 31st – an offer quickly accepted as it still gave the school and NERG adequate time to prepare.

The prospect of the contact had created quite a deal of local media interest. Details of the planned contact were reported, complete with photos, in our local newspapers throughout February. We did not expect any media attention mid-March, as Melbourne was in the midst of hosting the Commonwealth Games. Nevertheless, to our surprise, and through the hard work of our Publicity Officer John Kent VK3BIZ, Natalie Will, the Briar Hill teacher in charge of the event, was interviewed on the Star Stuff science program on ABC's News Radio, broadcast nationwide. The interview was replayed on two later occasions. This was followed by another radio interview on our local community radio station. The interviews were a credit to Natalie, adding solid support to all involved.

Was it worthwhile? If you could see the children's faces at various times during the contact, and after, when John VK3ZRV presented each their "Participation Award", you would not need to ask.

With the date set, final preparations

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Natalie Will and Don Haslam VK3KDT prepare for the event

began. Tony VK5ZAI was to ship off to the NERG a very sturdy Telebridge unit for us to use, and Natalie, with assistance from NERG President Greg Williams VK3VT and NERG Secretary John Weir VK3ZRV, rehearsed the questions to be put to the ARISS crew. The children's excitement was obvious; we had 22 participants, all armed with questions for Bill McArthur, the ISS commander – and they were ready.

Why a Telebridge? Good question! ARISS and NASA are keen for every public contact with the space station to present a positive outcome. We didn't feel that we had enough experience with satellite and ISS communications to guarantee a direct contact, and chose the Telebridge option. Telebridge uses a telephone link from the school to an ARISS ground station for a high reliability link to the ISS. In this case, we linked to Tony's well-equipped and proven amateur satellite station.

The NERG duly received the Telebridge, and carried out several trials to ensure all was in readiness. There were no problems - it was felt this was going to be an easy affair, given the preparation.

Tony had provided a time schedule of what we could expect, starting with the "live" phone call beginning 30 minutes prior to the actual contact. He advised allowable contact time was to be a maximum 8 minutes, as he had only 15 degrees elevation on the scheduled ISS pass. The pupils were advised, and accepted, that due to time constraints only half of them might be able to ask their question.

Friday March 31 arrived.

The NERG crew, with Grant Stowell VK3HFS, Jack Bramham VK3WWW and others, arrived at Briar Hill Primary school at 6.00 pm to set up the Telebridge, amplification system and video equipment. Final tests were carried out and all was well. No worries!

By 7.15 pm, the assembly room was full of excited children and expectant parents, plus Banyule Mayor Wayne Phillips, a State Government representative, and others. In all, we had 100 people all eager to witness the contact.

At 7.30 pm, the much-awaited call comes into the Telebridge. We answer the phone but cannot hear anyone talking - still not a problem as Tony had provided clear instructions on how to best adjust both microphone and audio volume. All normal adjustments were made but still no useable audio. Murphy's Law had struck once again!

For the next 20 minutes we had electronic experts Grant VK3HFS, Mark VK3BYY and John VK3ZRV all working frantically to resolve the problem. Finally, with approximately 6 minutes left to the scheduled contact time, we were able to obtain enough audio to be heard throughout the room, not the best by any means but sufficient for the night to be the success all had hoped.

The formal contact began at 7.55 pm. The room quietened and everyone listened intently. Tony VK5ZAI called up NA1SS and a sigh of relief was heard through all assembled in the hall as Bill NA1SS responded, loud and clear. Wonderful! After a very brief introduction from Tony we are up and away, Sam leading off with the first question. Bill's reply was immediate and very audible.

The students each in turn asked their question and listened to Bill's reply and to our amazement and gratitude, both to Bill's timing and Tony's prompting, we actually managed to have all 22 questions asked and answered. At 8.12 pm, acknowledgements were made to all in the ARISS team, and Tony, for providing an excellent contact. The night culminated with the presentation of a very nice "Certificate of Participation" as a memento of their special night to each pupil by John VK3ZRV. A light supper then followed.

During the following weeks, Jack VK3WWW spent hours editing and preparing 2 DVD's of the occasion, one solely for school use and another better suited for Amateur Radio. They are of exceptional workmanship and quality and are likely to be used internationally by the ARISS team. Likewise, Grant VK3HFS put in hours to produce an excellent audio CD of the event and has included very informative interviews with the students, parents and other dignitaries who attended. Their comments on the value of having such an event are worth hearing and add to the pleasure of those who helped provide the contact.

Was it worthwhile? If you could see the children's faces at various times during the contact, and after, when John VK3ZRV presented each their "Participation Award", you would not need to ask. Oh, and yes, it has created a greater awareness of amateur radio within the community.

Our sincere thanks to Astronaut Bill McArthur on board the ISS, Natalie Will from Briar Hill Primary School, all the hard working people in ARISS, to Tony VK5ZAI, Greg VK3VT, John VK3ZRV, Mark VK3BYY, John VK3BIZ, David VK3THY, Grant VK3HFS, Jack VK3WWW, and others who made the night one that everyone will always remember.

To any VK amateur radio club, I highly recommend you select a local school, and arrange a contact. It is fun – and shows amateur radio in a very positive aspect.

ar

Magneto-ionic holes:
Is your antenna coupling well into the ionosphere?

Robert R Brown NM7M

The phenomenon of 'power coupling' is one that is relatively little known by radio amateurs. Simply put, power coupling is how well the RF waves propagated by a transmit antenna used on the 1.5 to 30 MHz spectrum 'couple' into the ionosphere.

In some parts of the world, such as large parts of Australia, Asia and Africa, horizontal polarisation of antennas offers optimum power coupling, while in others, such as the United States of America, vertical polarised antennas provide the optimum [1].

An important factor affecting whether vertical or horizontal antenna polarisation will provide optimum power coupling is the geomagnetic latitude of a particular station location. Geomagnetic latitudes are different from geographical latitudes, as the magnetic North and South Poles are located in different places from the geographic North and South Poles, with which we are more familiar.

Mercator projection world maps that show geomagnetic latitudes are presented in some specialised books – a small map of this kind is shown on page 1-25 of ON4UN's Low-Band DXing book. The use of optimum power coupling methods to enhance propagation began in 1965 with the work of two broadcast engineers, Philips and Knight [2], who were dealing with medium frequency (i.e. 1.5 to 5 MHz) communication problems.

As I worked extensively in Australia before retiring from my work as a professor of physics, I thought it would be of interest to let my fellow amateurs 'down under' know how power coupling may affect their activities on the HF spectrum.

I recently wrote an article for the US-based Low Band Monitor magazine [3] about the effect of magneto-ionic power coupling loss on low-band DXing. In this article, two widely separated examples of power coupling were given - one for the use of vertical antennas at an equatorial latitude (i.e. close to the equator), and the other for the use of a horizontal dipole antenna in the USA.

Those two examples showed the effects of power coupling that resulted from the

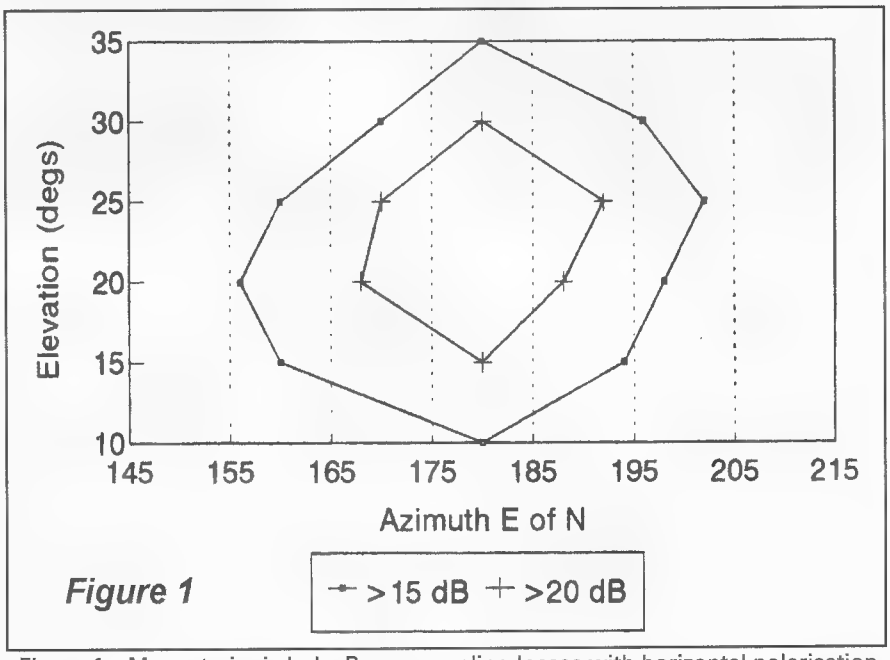

Figure 1 – Magneto-ionic hole: Power coupling losses with horizontal polarisation at 1.8 MHz, southwards from Sydney, NSW.

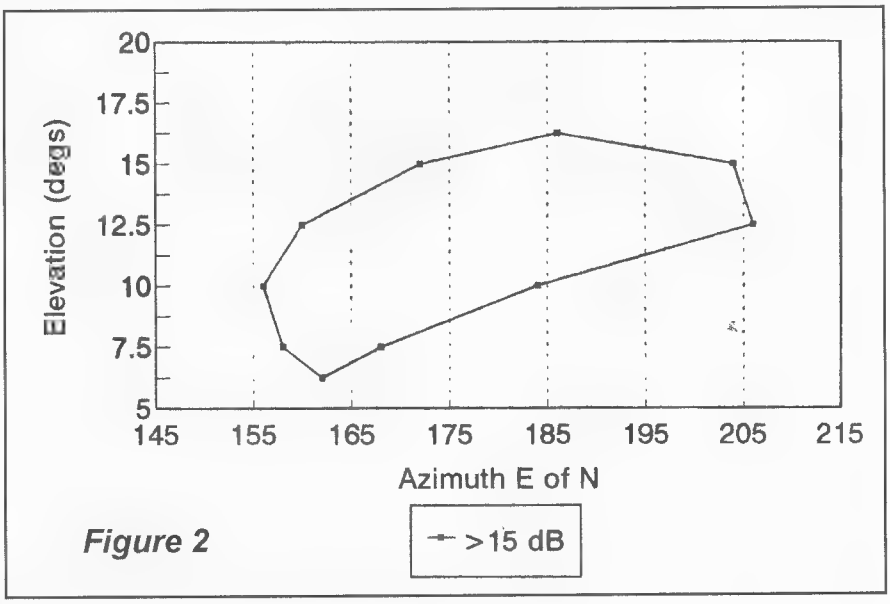

Figure 2 – Magneto-ionic hole: Power coupling losses with horizontal polarisation at 7.0 MHz, southwards from Hobart, Tasmania.

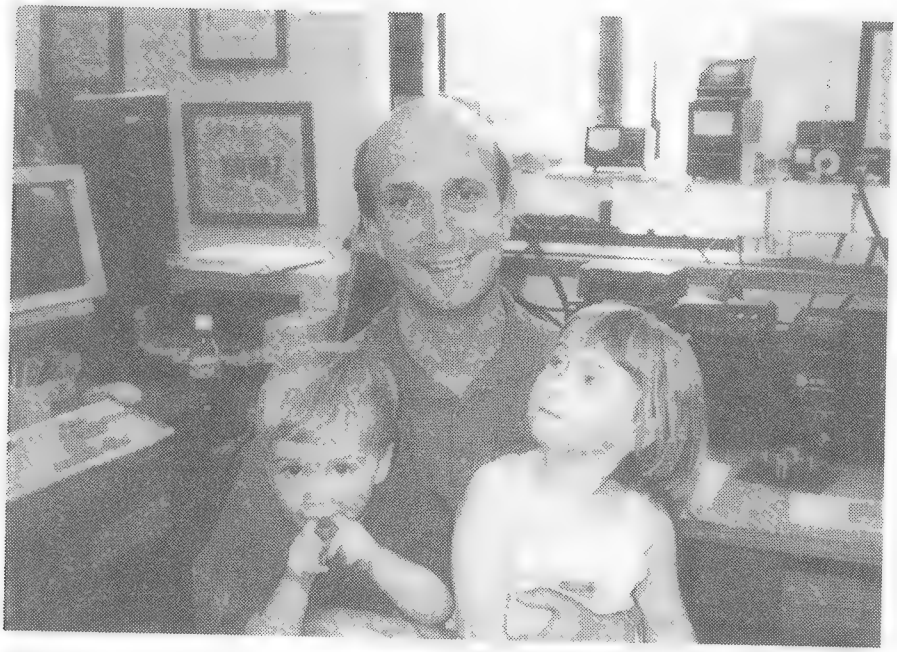

Photo 1 – Steve VK6VZ (pictured with his two children, Hannah and Sam) regularly works DX on 160 m.

use of these particular antennas at these particular locations, but did not reveal the full extent or nature of the problem of signal losses that result from non-optimum power coupling.

In the article you are reading, I have extended the treatment of power coupling in order to show in dramatic terms the full extent of the signal-loss problem that is present with power coupling - signal loss from what are termed "magneto-ionic holes" in the ionosphere. To start with, I need to take you back to the kind of things you learn about in high school physics lessons.

Another way of looking at power coupling is that it is concerned with the polarisation effects that result when signals are sent through an ionosphere immersed in our geomagnetic field.

In many ways, these radio wave polarisation effects resemble the behaviour of polarised light in optical physics. A radio transmitter is the source of signals, then the magnetic field in the ionosphere polarises the waves and the intensity of received signals depends on the orientation of the analyser - a receiving antenna - relative to the field of the polariser.

The degree and the type of polarisation both depend upon the path-field geometry of waves that are incident on the polariser. If the axis of the polariser and the axis of the analyser are 'crossed', zero transmission through the system, or full extinction, results in the case where the polariser creates linearly polarised signals (eg. from the Law of Malus in optics).

If the polariser yields elliptically polarised signals (where one axis of polarisation is partially suppressed whilst the other is relatively unattenuated), a minimised received signal results, even when the analyser is oriented for maximum rejection.

For amateur radio problems, I developed a computer modelling method in 1998 [4] to explore these matters using either vertical or horizontal antennas and the features of the geomagnetic field ('strength', 'dip' and 'declination') at any location as given by the International Geomagnetic Reference Field [5].

The parameter of 'dip' is one with which many people may be unfamiliar – this is the angle a horizontally pivoted compass needle makes with the horizon. For example, in Australia, the compass points up at an angle of about 65 degrees, showing the direction of the earth's magnetic field at that location.

The 1.8 MHz amateur band, in which I have a special interest, is one where the effects of power coupling can be particularly severe. My computer modelling showed a quite significant power coupling loss for the east to west transmission of vertically polarised signals from the country of Togo, West Africa (7N, 1W), in which there was a radio amateur who was interested in 160 m DXing.

Modelling also showed significant power coupling loss for horizontally polarised signals going north toward the polar cap from Minneapolis, Minnesota (45N, 93W), where there are a number of active 160 m operators. A signal angle of 15 degrees above the horizon was chosen because the magnetic dip is 73 degrees, thus putting the signals going north nearly perpendicular to the field lines.

However, these were only limited results from two 'spot' calculations. At this time of the sunspot minimum, where many radio amateurs are turning to our

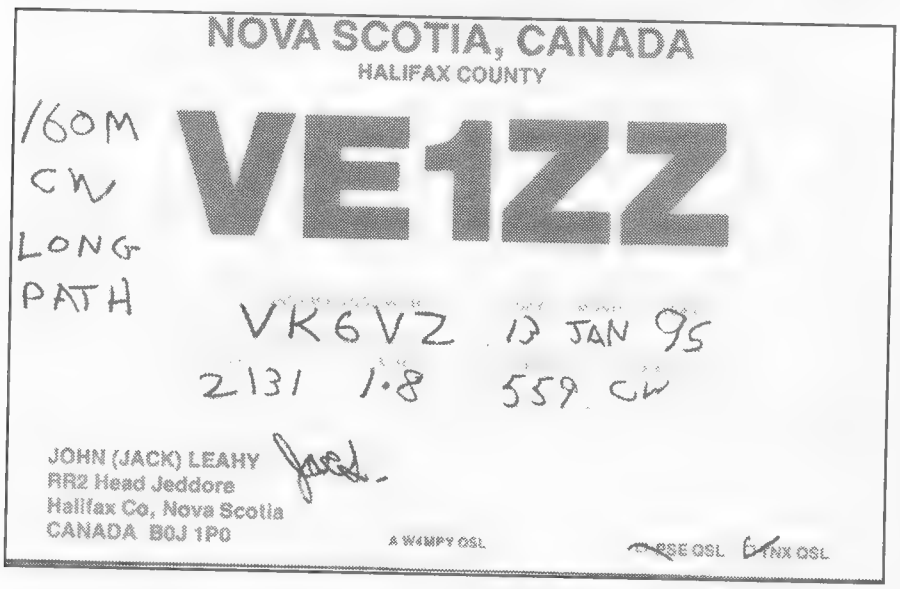

Photo 2 - VK6HD and VK6VZ have been working VE1ZZ (QSL card pictured) for many years on 160 m.

lowest amateur band of 1.8 MHz, I would now like to present some more complete results for this band for a number of sites in Australia, over ranges of elevation angles and azimuths of propagation.

The first site I will look at is the major population centre of Sydney, for which the elevation angle of signals was swept from 10 to 35 degrees, while the azimuth ranged 155 to 205 degrees east of north (ie. +/- 25 degrees about due south).

From data points, the limits of azimuth and elevation within which power coupling losses were greater than 15 dB and greater than 20 dB, respectively, are shown in Figure 1. The lack of symmetry of the curves about due south is due to the declination of the geomagnetic field at Sydney.

For Sydney, the dip is -64.5 degrees and Figure 1 shows that a huge portion of the southern ionosphere would not propagate signals very effectively in the general direction of the South Pole when transmitting at about 23 degrees elevation, which is approximately perpendicular to the geomagnetic field. Those results were for the case of horizontal polarisation of signals to the south and I believe they give proof for "magneto-ionic holes in the ionosphere".

Different results are found toward the north from Sydney, where, over the same range in elevation angles, the power coupling loss is only five to six dB. This is because signals for northern azimuths are predominantly elliptically polarised, as compared to almost linear polarisation for southern azimuths.

From a magnetic dip chart [6], you can find sites in the USA with dip latitudes as low as +60 degrees. Over Australia, dip latitudes are lower, down to -40 degrees around Darwin. That being the case, magneto-ionic hole patterns such as those shown in Figure 1 are centred at higher radiation angles for Australia - almost 50 degrees at Darwin. The greatest dip angles are found in Tasmania, the dip at Hobart reaching -73 degrees. The magneto-ionic hole pattern for Hobart on 1.8 MHz resembles that at Sydney in all respects, except it is centred on a lower radiation angle of about 13 degrees.

Such high angles generally have no value for long distance low-band DX contacts, owing to suffering heavy ground losses and D-region absorption with many hops. However, Australian 160 m operators such as my friends VK6HD and VK6VZ (see Photo 1) have had great success working long-distance DX (see Photo 2) using inverted vee dipole antennas at less than a quarter wavelength in height above the ground. With such antennas the major radiation occurs at over 50 degrees and is of the "cloud warming" type.

However, power coupling problems on 1.8 MHz are not the whole story with regard to magneto-ionic holes in the ionosphere. The higher DX bands have to be considered too, as computer modelling work I carried out in 2005 showed the presence of magneto-ionic effects at 7 MHz and 28 MHz.

As a result, I have carried out computer modelling for horizontal polarisation for the higher dip latitude at Hobart using 7 MHz and 14 MHz signals. In this case, the elevation angles were lower for losses greater than 15 dB on 7 MHz, as shown in Figure 2. Again, the lack of symmetry of the curve about due south is due to the declination of the magnetic field at Hobart.

On 14 MHz, the elevation range for losses greater than 15 dB is even narrower - from 10 to 12 degrees - but the azimuthal range is about the same as on 7 MHz. The latter is due to the high field strength - 59,000 nT at Hobart. At low latitudes, the field strength is about 30,000 nT and power coupling loss regions are narrower in azimuth.

In conclusion, the theory of magneto-ionic holes in the ionosphere rests on the reciprocity of ionospheric paths and the limiting signal polarisations [7] that can leave or enter the bottom of the ionosphere. As such, they depend on the antenna polarisation involved and signal direction relative to the geomagnetic field.

Since the ionosphere is always immersed in the Earth's magnetic field, the potential absorption effects of magneto-ionic holes are always present. In practice, they are present everywhere, across both hemispheres, giving rise to background signal losses, but especially when trying to work pole-wards from mid-latitudes with horizontal polarisation. In contrast, the absorption effects from auroral activity come and go at high latitudes.

Magneto-ionic holes are smaller in size on the higher frequency bands, a fact that should be of some aid and comfort to 14 MHz DXers 'down under' who use horizontally polarised antennas.

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As amateur numbers grow, so does the WIA

As we have read in the WIA comment/news section, we can see that the number of licensed amateurs in Australia is currently growing – a large turn around from previous years. It is clear that a significant part of this growth is the result of the new entry point – the Foundation Licence, introduced last October.

Our WIA has also been experiencing positive growth with a huge influx of new members: last month 77 Amateurs showed their support by joining. If you haven't yet become a member, there's never been a better time than now.

Member benefits

As a member, you will receive AR monthly in your letterbox, your own WIA email address, member's prices at the WIA Bookshop, free access to the WIA QSL bureaux, plus all the other benefits of WIA membership.

In addition, for the next month, the first 100 people to join will also get a copy of the WIA Callbook absolutely free.

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Aircraft enhancement

A project beginning almost 50 years ago

Don Heberecht VK2RS

During the Geophysical Year way back in 1957/58, together with well known two metre operators VK3RK, VK3BQ and others, we conducted a regular schedule during the evenings for 364 days on 144 MHz (AM or CW) from Albury NSW to Melbourne as part of the Geophysical Study conducted by a Victorian University.

Contact was established on each of the 364 days by aircraft enhancement at about the midpoint of the flight path for a period that varied from a few minutes to 10 minutes or so.

The antennas used were phased arrays of 16 to 24 elements. Mine was 16 elements at 15 metres and constructed from 12 gauge fencing wire!

Yagis were originally tried but the wider captive capabilities of phased arrays gave a longer and more reliable period at the expense of some forward gain. I do recall one installation of a four bay five element stacked array installation that gave comparable opening periods. (Long Yagis as we know them today were not popular then).

Whatever happened to the data from this experiment is unknown to me. I guess it is stored in the archives of the particular University that initiated the study.

What it did do, however, was to raise a number of questions in respect to the predictability of future aircraft enhanced transmission and reception: what would happen as aircraft changed, would there be impediments or limitations that precluded the potential to develop the possibilities, and could there be medium change through pollution or natural phenomena properties; indeed a study for later on…when I retire.

Recently I retired and moved to Corryong in North Eastern Victoria, a few kilometres from the NSW border and in the shadow of the Snowy Mountains.

This location has little potential for VHF communication with the possible exception being in a westerly direction. However, it does have a unique resource. The Sydney to Melbourne Flight Path is directly above the town and closely follows the Valley topography.

The parallel return path is a few

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Specifications

Antenna	TEV-4	TEV-3	TEV-3 Warc
FREQUENCY	7, 14, 21, 28 MHz	14, 21, 28 MHz	10, 18, 24 MHz
ELEMENT HEIGHT	4090 mm	3800 mm	5025 mm
FEED IMPEDANCE	50 OHM	50 OHM	50 OHM
MAx. RADIAL LENGTH	10.7 Meters	5 Meters	7.5 Meters

Photo 1 – The pair of stacked nine element Yagis at 1.5 metre separation and horizontally polarised at a mean height of 18 metres

Photo 2 – The north AE fixed five element Yagi at 45 degrees.

kilometres to the west and outside the Valley.

In recalling the experiments of earlier days, I was mindful of the legacy of this unfinished project. Encouraged by well-known VHF enthusiasts, Ian VK1BG and Chris VK2DO, it was decided to investigate the potential of utilising the overhead Sydney to Melbourne flight path.

The equipment used included two, fixed five element Yagis, one to the northern section of the path at 45 degrees, the other on the southern section also at 45degrees, both horizontally polarised and centred at about three metres above ground.

A 12 element fixed phased array is mounted just above the house roof looking at the sky and covering the 30 degrees or so about the vertical, thus attempting to fill the gap between the north and south tilted antennas.

A pair of stacked nine element Yagis at 1.5 metre separation and horizontally polarised at the mean height of 18 metres (rotary) serve as the station antennae.

One nine element long Yagi on a separate tower at about 10 metres with rotator is used as a standby when coupled to an Icom IC-271A Transceiver. The transmitted power output is a nominal 100 watts (Kenwood TS-2000).

I have written an application in Microsoft Access which records stations that I have heard against the four antennas with reference to date, time, signal strength peak, temperature, barometric pressure, sunny, cloudy, wet, dry, and solar level (as received by the vertical phased array mounted on the roof and looking towards the sky).

All of these measures intended as general "layman's" observations that may be of value in the final evaluation. The observation usually involves three readings of each antenna where possible and records the maximum signal strength received. Often, however, the opening is too short in time to allow this.

In the first month of operation, there have been 170 loggings, which include the north, south and vertical loggings as well as the direct path.

What has been surprising is that frequently the vertical antenna (phased array which I will call the "scatter" antenna) hears openings that appear on any of the other antennas, and generally for a longer time, when compared with the north and south tilted aerials. This without the usual peaks and troughs and short bursts associated with aircraft enhancement and appears to be independent of aircraft schedules.

I find myself automatically monitoring with the "scatter" antenna to determine the direction of the incoming signal before directing the horizontal array.

This has been an unexpected phenomenon for which I have no explanation and, in effort to gain a better understanding, I have sought advice through the Internet VHF group, challenging others in both country and city to replicate the experience by recording what is heard at their location when you point the antenna skyward.

By way of interest, in the first sample period for the month of January and part of February 2006 there has been 427 "S" points of data logged on the direct route, 49 points on the north AE antenna, 98 points on the south AE antenna and 157 points on the "scatter" antenna pointed skyward.

It is still far too early to draw any serious conclusions, but already there are some interesting data trends that may indicate that at the end of the year-long study there may well be, in "layman's" terms, some factors or properties overlooked in determining current aircraft enhancement considerations.

Therefore, in 2007, exactly fifty years on, I would hope to provide some answers to satisfy a young man's curiosity or an older man's dilemma.

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You *can* work DX from apartments!

Ira Lipton WA2OAX

Since moving to Manhattan in 1994, I have contacted 310 DXCC entities from two different apartment locations. I have decided to write this article describing my antennas to encourage others who may feel that they must abandon chasing DX because of antenna restrictions.

I arrived at the final configurations of my antenna arrangements after poring over many articles that have appeared in the amateur literature over the years, regarding mobile whips, ground losses, and coil design, etc, and LOTS of experimentation. I have been very surprised at the performance differences even slight changes can make in the system.

I must admit that my first apartment was chosen with radio in mind. I rented an apartment on the top (19th) floor of a building. The unit faced north and provided clear paths from east to west with few buildings obstructing the view (the most challenging DX paths from the northeastern US run from 90 degrees to 270 degrees on the great circle chart). The apartment also had a 3 by 12 foot terrace with a large railing that did not seem to be tied to the building's steel framework.

Once I conquered my fear of working on the terrace, and peering over the edge at about 190 feet from terra firma, I obtained an approximately 2 foot square ½ inch steel plate (heavy) and had a pipe flange welded to it close to one corner. A 5 ft length of 1½-inch pipe was threaded into the flange for a mast (a small section of slightly larger diameter pipe was slipped over the top of the mast and welded in place for a bit more secure clamping surface for the antenna). The steel plate and mast were placed at one corner of the terrace.

A large ¼-inch aluminium plate was fitted with u-bolts at one end to attach to the mast. A heavy-duty (cast) mobile ball mount was fitted to the other end of the plate. I was ultimately able to securely attach a 2 foot long stainless steel mast, a large silver plated loading coil, and an 8 foot "whip" configured from aircraft grade aluminium tubing (total length 12 feet) to the mobile mount.

The antenna was mounted horizontally and could be swung out 90 degrees from the building. A nylon safety rope was attached to the supporting pipe and the antenna just in case my calculations were incorrect! There were never any mechanical failures in eight years of operation. Of course, the antenna was safely tucked back into the confines of terrace when not in use.

Photo 1 – Ira WA2OAX standing on the balcony with the loaded whip swung out into the operating position.
(Photo by Bill VK3BR)

Now for the electrical details: Experiments at another apartment location in the 1970s showed that the whip antenna worked much better in the horizontal position, and as far away from the walls of the building as possible (ie at a 90 degree angle). I leave the explanation for the improved performance to my more sophisticated engineering colleagues, but I assume this placement minimises interaction with the building's steel framework. A 20 dB or so improvement in received and transmitted signals was evident on all bands when the antenna was rotated out from the confines of the terrace.

The antenna counterpoise required considerable experimentation. I attached varying lengths of well insulated (3,000 volt) wire to the ground (braid) connection at the ball mount with solid copper clips. It was difficult to predict the ultimate optimal length of wire for any given band because of the effect of all the metal on the terrace and the proximity of the building. As you would expect from minimising ground losses, the best performance, both receive and transmit, occurred when the radials were tuned for minimum SWR bandwidth.

Optimum performance was obtained on the lower bands (80 and 40) metres when the large diameter aluminium terrace railing was used as a counterpoise.

The performance of this system was, at times, astounding even on the lower bands. A computer-generated plot of the vertical pattern provided for me by NE2Q was impressive. On one occasion, I was able to work JA3CZY on 80 metre SSB

with S9 signals both ways (no mean feat from the east coast of the US, even with a full sized antenna).

After purchasing a hilltop location in the country a few years ago, I decided to rent a less insanely expensive apartment in Manhattan, this time without a terrace and facing south. I reasoned that, with the availability of large directional antennas in the country, and virtually no ambient noise or problematic neighbours on the weekends, why would I need to operate from the city during the week? This resolve lasted approximately three months.

Realising that the management at the new building would probably be less sympathetic to radio antennas, I attempted to use various indoor antenna configurations. The results were disappointing. I then purchased an MFJ base loaded whip supplied with a bracket that could be clamped onto a window.

Things were starting to look better. I was able to hear and work some DX, but it was a struggle even running about 400 watts output from a small Ameritron amplifier. There was evidence of considerable RF coupling back to the equipment. The antenna bracket placed the base loading coil adjacent to the framework of the building and, by necessity; the counterpoise wire was run back into the apartment along a windowsill.

After considerable head scratching, I decided to place my old two-foot long stainless steel mast on the MFJ antenna bracket, then screw the base coil onto the mast. This arrangement effectively places the base of the antenna two feet from the building. I then wound most of a 16-foot length of 3,000-volt wire onto the mast to act as a counterpoise. The remainder was left dangling into the apartment.

The improvement has been dramatic. Signals, both receive and transmit, average two S units louder on all bands (40 through 10 metres). In a little over a year of sporadic operation I have worked 144 countries with the little antenna (including FT5XO and 3Y0X), but who is counting?

Of course ,one must exercise a bit of discretion. The antenna is placed out the window only under the cover of darkness, or early on Sunday morning (as Manhattanites do not usually see the light of day until noon on Sunday.)

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Marconi centenary celebration hailed a great success

Ron Churcher VK7RN

The tumult and the shouting has just about died but this successful co-operative venture between the Geelong and the Tasmanian North-West radio clubs, will be remembered for a long time. It certainly wasn't a simple thing to set-up but the result fully justified the hours of organization on both sides of the Strait.

Hundreds of QSL cards have been made out and the ones not required to be posted are in the QSL bureau. We were very fortunate to have commercial help with Icom Australia loaning us one of their brilliant Icom IC-7000 transceivers – we would recommend this set to anyone needing an all band set. Moonraker Antennas in Hobart loaned us the required HF antennas. We must thank these two companies for their co-operation. We learnt a couple of lessons -- One – when transmitting using all band verticals and long wires with open wire feeders (non-coax), don't expect to use computers etc. within 50 feet! and Two – when working in an exhibition hall with lots of 12 volt lighting (split-mode transformers) expect strength five noise.

One disappointment – We had a scheduled schools chat with the space station astronauts on the Thursday (13th.) but with the delayed space shuttle docked at the space station this had to be postponed. It is now on Friday, 18th August. However, the twenty students from our two main high schools are still all fired up.

One big highlight – the success of our Marconi centenary 24-page booklet – a reprint of the original Marconi 1906 brochure plus a report of the actual 1906 proceedings. Orders for this have come from around the world. An interesting aspect is the way some radio clubs have ordered multiple copies for their members. At $6.00 posted, it is a very cheap but valuable historical document. We still have some copies left so it's "first up – best dressed". When they are gone – that is it. Order yours at Marconi Centenary, 177 Best St., Devonport, Tasmania 7310.

ar

Barry VK7FR reads overseas greetings in Devonport

The crowd at Queenscliff

Adventures with a hand-held

Rob McKnight VK2MT
mcknightr@winnsw.com.au

Always have your handheld in your pocket, you just never know what opportunities may arise!

My family had always wanted to go on a cruise, so after much saving and close scrutiny of island destinations, a 10-day cruise to the South Pacific Islands of Vanuatu and New Caledonia was finally booked over the last Christmas period.

The 30 years of interest that I have had in radio has always revolved around propagation characteristics, whether they be via skywave or groundwave. As much as the relaxation side of the cruise was welcome, the opportunity to perhaps also "play radio" and see what propagation characteristics would be encountered, with thousands of kilometres of water and little or no man-made noise, was something rather intriguing.

As well as packing all the usual tourist paraphernalia, several radio items were taken along: a MW/SW/FM broadcast band radio, VX-7R handheld and charger, GPS, small earphone, list of Australian Amateur repeaters, log book, small LED torch (you just don't know what your operating situation might be!), copy of my Amateur Licence. Of course, I also packed all the relevant licensing documentation needed for the only country that we were visiting that had Reciprocal Licensing with Australia, that being New Caledonia.

The broadcast band radio was for the aforementioned interest in propagation for the various bands while surrounded by water. The handheld was to see how far the Australian VHF and UHF repeaters would reach out to sea, and to use it via the Noumea FK8ZHA 2 m repeater, a repeater I had often accessed previously from back home in Wollongong.

Before the ship's departure from Sydney at 7 pm, I quickly sought approval with the ship's Radio Officer to use my handheld while on-board. After a very pleasant chat, approval was granted. As we exited the heads of Sydney Harbour, I made easy contact with friends via the VK2RMP 6850 repeater.

Later on, as we enjoyed the first of many fantastic 5-course dinners, the ship tracked closely to the NSW north coast until just past Coffs Harbour. It then headed out to open sea on a NE tack towards the islands of New Caledonia. Repeaters from Gosford to Lismore were all accessible until we were well out to sea, the last repeater being accessible was VK2RCH 6650 at Coffs when about 150 km from the coast.

Photo 1 – VK2MT and VX-7R on board the Pacific Sun with Noumea in the background.

While at sea over the next few days, in between partaking in the shipboard activities and the vast array and huge amount of food on offer, I regularly grabbed the broadcast radio and went for a wander to two different spots I had found offered the best radio positions. These were the large viewing area located above the bridge on Deck 10, or on Deck 11 mid-ship, above the main pool and waterslide.

Deck 10 was great for stations in front of the ship, but often suffered from high wind and also some radar desensing on some of the broadcast frequencies. Deck 11 was my favoured position, as it was more sheltered, closer to the bar and also provided far more alternative viewing around the pool area when the bands were dead!

The MW band was as expected. During the day, despite the noise floor being very low (almost non-existent), the band was almost dead with only a couple of very weak, unidentifiable stations fading slowly in and out. Of course, during the night the band absolutely came alive, with stations from Australia, New Zealand, New Caledonia (easy to identify because of the French language) and even a few stations from Hawaii. Because of the low noise floor, listening was an absolute pleasure even on such a small radio, with minimal signal fade, no crackle or static, just lots of signals.

The FM band was a surprise though. I expected a "dead band" while out at sea, but surprisingly, not once during the entire 10 days did I not hear at least 5 to 10 stations coming in. Even 1,000 km from land, there were always many stations to be heard both day and night. Gold Coast was the main area of transmission heard, but I also heard stations from Cairns, Port Macquarie, Newcastle and even

Batemans Bay. In the other direction, French-speaking stations from New Caledonia were heard more than a day and a half before reaching the area.

About midnight on the second night, while still around 500 km from Noumea, I was able to easily trigger the FK8ZHA repeater, but being late, my calls went unanswered. Something to keep in mind, this repeater on 146.800 MHz appears to require audio to trigger it successfully, not just a carrier, something I wish I had known when trying to access it earlier.

For the next 7 days, we enjoyed the beautiful Isle of Pines, the duty-free shopping of Vila and the spectacular snorkelling and seclusion of Lifou.

On Christmas Eve morning, we arrived in Noumea Harbour and while my wife and younger children went for a plane ride over the city, my eldest son and I hired a motor scooter for two hours to explore the city at ground level.

The art of keeping to the right hand side of the road tended to come naturally when you are one of the smallest road users (I suspect it was self-preservation kicking in!). Some big roundabouts that were several lanes wide proved to be a bigger challenge: one instance requiring us to go around three times before being able to get off!

About half an hour into our ride I noticed a sign pointing to what I figured was a lookout, my high school French being of no help deciphering the sign's words but the little camera icon being a giveaway, although it could well have been pointing to a camera shop.

The road led to a hilltop that was over 350 m high and provided a majestic 360-degree view of Noumea and obviously must have afforded some past strategic military advantage as there were a couple of large old cannons on top as well.

After taking the necessary tourist photos of the city and the aqua blue bays to the north, I pulled out the VX-7R, which I had almost forgotten I had put in my shorts pocket hours earlier, and put a call out on the local FK8ZHA 2 m repeater.

My calls once again resulted in no replies, maybe this time it was my very poor attempt at a French accent, so I aimlessly "kerchunked" a few repeater frequencies just for the hell of it. To my surprise, a few repeater tails came back on 6700, 6925 and 6950. At first, I just assumed they were just some repeaters located elsewhere in the island's region; after all, I was on top of a high hill.

I then came across an English-speaking conversation on 7075. I figured they were probably just a couple of Aussie tourists in the area. When they announced their VK4 callsigns, minus the "portable FK8" suffix, my excitement rose considerably.

Photo 2 – The old and the new – a traditional island hut with a satellite dish.

Not expecting to be able to access this apparent VK4 repeater, I pessimistically put a call in between their overs, to which they immediately replied. Still not being totally convinced and not wishing to embarrass myself, I cautiously asked their location to which they replied - Brisbane. They in turn asked me my location.

Here was one of those rare moments ..... what would you say? You are standing in a foreign country, exposed to some very unusual radio conditions, using a handheld radio and accessing a repeater around 1,500 km away! So I calmly (not) replied, explaining my location and circumstance, to which after initial disbelief and questioning, they believed.

Over the next half an hour, from 11.05 am, I enjoyed a great conversation with VK4IBR and VK4KOR on the VK4RAX Brisbane repeater. We could even hear each other's input signals, so we went to 146.500 MHz for a simplex contact. VK4RAX's signal strength varied between S5 and S9, with the direct signals being between S3 and S7. During this time, my son took a photo of myself (complete with my big grin) and using the digital camera's movie mode, I recorded parts of the conversations to both prove the contact and for my own record.

Despite continuing good conditions, all too soon we had to leave to return the scooter to the hire place. On the way back, still being in a state of disbelief and excitement, we took a wrong turn and got quite lost, eventually finding our way back to the harbour with the help of some friendly, but non-English speaking locals.

Upon arrival back on board the "Pacific Sun", I attempted to share with my family my excitement and also explain the rather

Photo 3 – The Pacific Sun at Port Vila.

extraordinary radio conditions that I had just experienced, but this was only met with an "OK, that's great dear, let's go and have some lunch".

After a very quick lunch, I wanted to check what the conditions were like from my favourite spot on Deck 11. To be honest, I truly did not expect anything; after all, I was now at sea level compared to the 350 m hilltop.

Well it took no more than 30 seconds to discover that in fact, conditions were FAR better than they were on the hilltop. Every 2 m repeater frequency from 6625 to 7100 had at least one, if not two or three, triggerable repeaters. Could it get any better than this?!

From 12.20 pm through to 1.50 pm, I made contact with the following list of Amateurs via repeaters VK4RSC 6850 Sunshine Coast, VK4RRC 6925 Redcliffe, VK4RGG 6950 Gold Coast and VK2RGL 7100 Great Lakes on the mid north coast NSW, some contacts as noted, were also on 146.500 MHz simplex.

June VK4SJ/m
Wayne VK4TWD
Bernard VK4KAC
Ray VK4YRS (plus simplex)
Phil VK4KVK (plus simplex)
Lee VK4KLA (plus simplex)
Frank VK3DYE/4
Greg VK4AML (plus simplex)
Spiro VK4IBR
Graham VK4JGH
Peter VK4TGV/m
Allan VK4HDM
Warwick VK4NW
Garry VK2UNI

Most signal strengths varied from S2 to S9, with some being full-scale on the VX-7R. I could wrap my hand around the rubber duck antenna, turn the radio horizontal and face it away from Australia, and it made little or no difference, the signals were so strong!

Once again using the camera's movie mode, I made 27 more recordings of various conversations. At that point, with great sadness, the handheld's battery went flat mid over, promptly putting an immediate end to my fun. I have since e-mailed some recordings to those who have sent me their details.

I'd had an absolute ball, despite the burning sun, high humidity and 37 degree heat. The handheld's case was past touch hot. It was a challenge to manage the many hectic conversations: trying to juggle the radio, camera, log book and pen, while also trying to co-ordinate the pushing of the PTT button at the right time in conjunction with the record button on the camera - it had been great fun!

The only sad note for me was being able to access my home repeater VK2RMP 6850 back at Wollongong, but I was not able to hold it reliably to make a contact. This was the southern-most repeater that I could identify, over the multitude of carriers and Morse idents.

An enforced break of four hours was occupied by a pre-booked tourist ride around Noumea on the "Le Petit Train" and the kid's dinner. The VX-7R's battery was now charged, so it was back to the airwaves. By this time (6 pm), we were now departing Noumea Harbour. The best radio position was at the front of the ship on Deck 10 facing towards Australia.

Conditions had also changed in those hours and now only NSW repeaters were coming in. Using the VK2RGL 7100 and VK2RCH 6650 Coffs Harbour repeaters, the following stations were contacted:

Keith VK2AT
Garry VK2UNI
John VK2SWR
Ray VK4YRS

Sunset was at 7.05 pm and the conditions coincidentally ceased almost immediately. Much later on, when about 100 km out to sea from Noumea, I eventually made my one and only contact via the FK8ZHA repeater to Patrice FK8HA. He was an extremely friendly chap, who invited us on our next trip to Noumea to come visit him.

For the many contacts had, distances achieved on the handheld had varied from 1,475 km to Brisbane, just under 1,800 km to mid-north coast of NSW and 2,056 km to Wollongong.

On Christmas Day, conditions were back, but nowhere near as good as the day before. Many calls resulted in only one contact made, that being to Graham VK4JGH via the VK4RRC 6925 repeater. As one might expect, most radios were probably turned off for the festive day's family activities.

From a radio perspective, the remainder of the trip was uneventful. A visit to the ship's bridge was a privilege. Since 9/11, such visits are rare. One interesting, if saddening point, was being told that except for entering or leaving a port, all the ship's radios are only now used for monitoring the distress frequencies, as all business is now handled via satellite accessed e-mail. Incidentally, the ship has three tracking satellite dishes for phone, internet and in-cabin television reception.

So next time you head for a holiday, make sure you have a radio stashed away somewhere: you just never know what is going to be on offer. Oh, and by the way, the cruise was good too!

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Photo 4 – A view of Noumea from the scenic hilltop.

Lightning

Effects of a near strike

Guy Fletcher VK2KU

Following a move from a suburban environment in the Blue Mountains to a rural property in the Southern Tablelands of NSW with no close neighbours, I was faced with a complete rebuild of both shack and VHF antennas. Some 8 months later on 31 December 2004, I finally powered up the linear for the first time. One month later, I was again off the air for an extended period following a severe storm and close lightning strike on the evening of 1 February 2005. The damage was extensive and largely my own fault, because I had not yet completed an adequate earthing system for the shack and antennas. I would like to share with you some details of what happened, the extent of the damage, and how it might have been prevented.

The shack is located in a room within a large shed about 100m from our house. Mains power comes to this shed from the house through underground cabling with a sub-board in the shed.

Damage in the house

The actual lightning strike was not a direct hit – it is difficult for an amateur to provide adequate protection to equipment from a direct strike. We never did find the

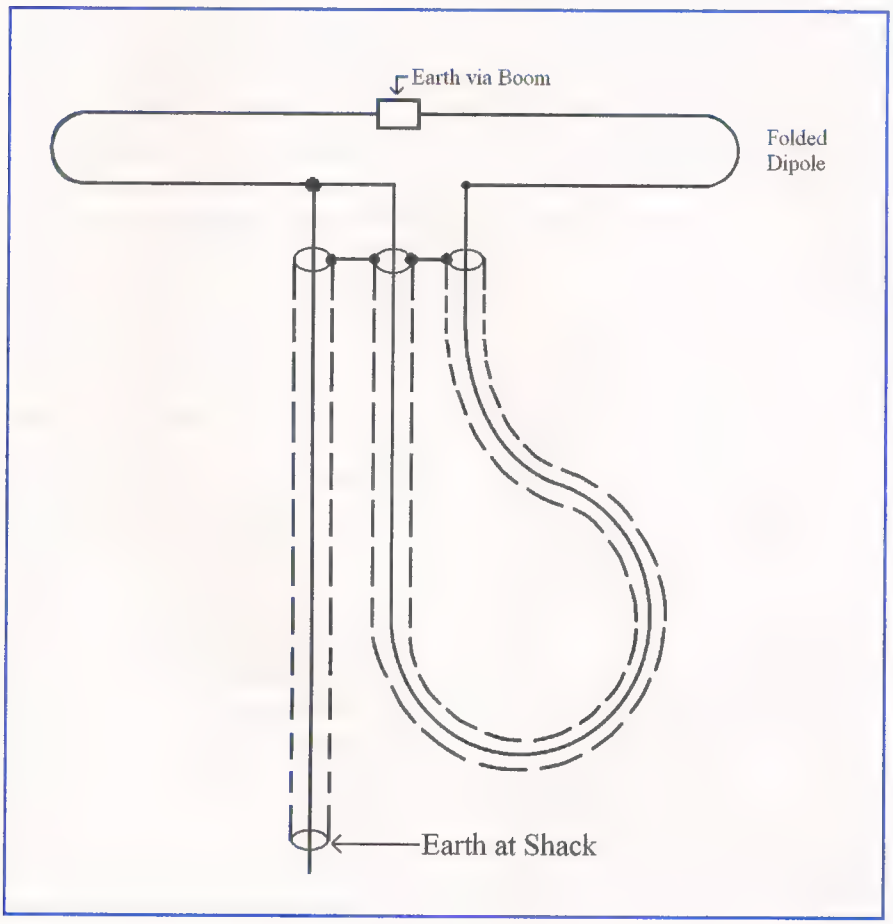

Fig. 1. Earthing arrangements in a typical half-wave balun

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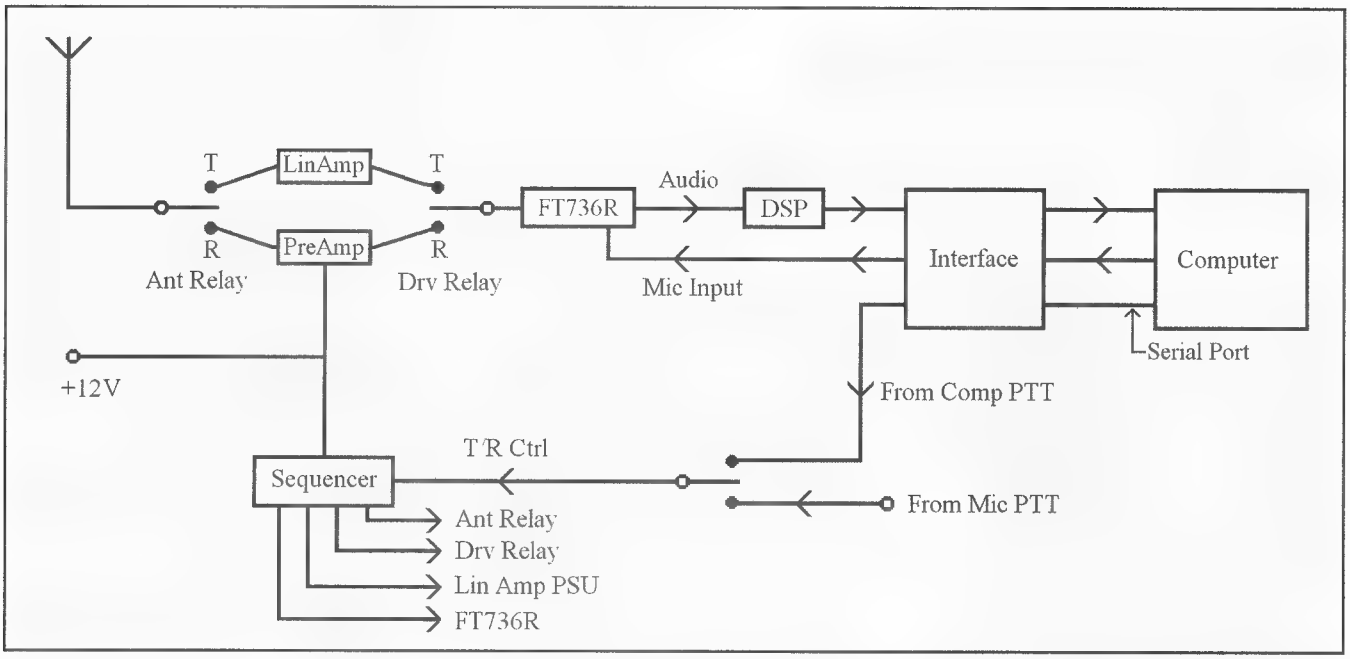


Fig. 2. Interconnection diagram for shack equipment

impact point, but I estimate it was about 150m away in trees on an unoccupied neighbouring property. There was certainly a very loud bang; a big surge on the mains supply, and most of the mains circuit breakers tripped out.

Within the house, we lost the control electronics for our oven, the temperature sensor in the fridge, a movement sensor on the verandah, and every light globe that happened to be on at the time. All of these were live to the mains. A surprising number of other items which were also live escaped unscathed – two TVs, two VCRs, two hi-fi systems, the central heating control, a chest freezer (presumably not actually running), and my internet modem. Perhaps only one of our two phases carried the surge.

In the shack

Everything in the shack was connected and ready to go, mains power points were on, but everything was switched off at the individual units. Coaxial cables, elevator and rotator control cables were likewise still plugged in. In hindsight, of course, I should have braved the horizontal rain and made the trip to the shack to disconnect everything, but the weather was anything but inviting and I did not do this.

Precious instruments such as my 275 MHz CRO, Signal Generator and Spectrum Analyser were live to the mains, and only switched off at their internal switches. None of those things suffered any damage. It seems that most of the damage in the shack was not caused by the mains surge, but entered the system through the cables from the tower.

The following items in the shed/shack were destroyed:

- Control electronics for the shed roll-a-door (from the mains surge)
- Rotator controller but not the rotator itself
- Elevator controller and screw jack on the tower
- Antenna coaxial relay
- Low noise receive preamp
- Yaesu FT736R transceiver
- Transmit/Receive sequencer
- Computer interface for digital modes
- Computer on-board sound card
- 12V power supply to preamp and sequencer
- Slow-start circuit in HV supply

What actually happened?

I naturally spent a lot of time analysing the probable sequence of events. In order to understand this I need to describe the setup in a little more detail. The four individual Yagis on 144 MHz are fed from the balun arrangement with open-wire lines to T-matches on each driven element. It will be simpler if we look at an equivalent and simpler conventional arrangement with a single Yagi having a folded-dipole element with a half-wave balun, as in Figure 1.

The centre of the folded element is grounded to the tower for mechanical reasons, although this is not electrically necessary. The two driven points can be traced back through the coax centre conductors to the shack. Thus, there is a DC connection from the tower (and its earth point) through the coax inner to the shack. The coax braids are electrically bonded to each other at the balun, but for mechanical reasons are not bonded to the tower earth – again, this is not electrically necessary – and can be traced back to the shack earth. This arrangement works perfectly well; however any direct voltage difference between the tower earth and shack earth will appear directly across the coax input to the shack. I believe that this is what happened in a microsecond on that day.

Good earthing practice requires that all earth points be bonded solidly together to prevent (or at least minimize) any voltage differences between them, but this was still a station under construction, and that aspect of the new shack had not yet been completed. So the probable scenario is a brief but very high earth current in the dry and stony ground following the lightning strike, which caused a high voltage difference (possibly 1kV or more) between the shack earth and the

tower earth about 15m away. This voltage appeared directly across the coax input to the shack!

The path of destruction

The controllers for the elevation system and the rotator were of course fried through their own cables. The main rotator was not resting at either end stop, so the diodes which prevent overrun at each end of travel were not exposed, being shorted by the internal microswitches. The rotator itself seems undamaged, though it is not possible to buy a replacement controller without the rotator unit, and in any case, Kenpro no longer supply to Australia (but Yaesu units are nearly identical). Both controllers are probably beyond economic repair. The elevation jack was resting in its lowest position, exposing one of its internal diodes, and this diode was in two separated pieces! That may have been its only fault, but since this screw jack had insufficient travel anyway, I took the opportunity to replace it with one having a longer travel.

Figure 2 shows a simplified diagram of the connections between the various pieces of equipment in the station as it then was. The antenna relay and drive relay rest in the transmit position to protect the preamp both when the station is off and when another band is being used. The inside of the CX520D relay provided no protection on this occasion! The transmit contact is a mass of melted metal, and although the receive contact is earthed when not in use; the voltage spike clearly entered the preamp by this route.

The preamp contains only low voltage components, and the spike was easily passed into its 12V power supply leaving an impressive path of destruction behind it in the preamp. Unfortunately the sequencer was at that time run from the same 12V regulated supply (not any more!), and almost every active device in the sequencer was fried. I believe that the spike was distributed to the rest of the station through the sequencer rather than along the coax. In any event the control system of the FT736R was taken out, leaving it in a permanent transmit mode and with regular and unwanted increments in frequency!

The two small audio isolation transformers in the computer interface unit were open circuit on all windings, with black soot all over the circuit board under them, especially the one on the receive path. This is a little curious because the Timewave DSP unit in that path was completely undamaged. The optical isolation transistor in the PTT line from the computer also failed, but it did its job in protecting the serial port of the computer from damage. This was little consolation however, as both the input and output audio connections to the computer were completely dead. Possibly a replacement soundcard would have fixed the computer, but I did not have one to hand, and the computer was due for upgrade anyway, being too slow for the increased size of later versions of the WSJT program.

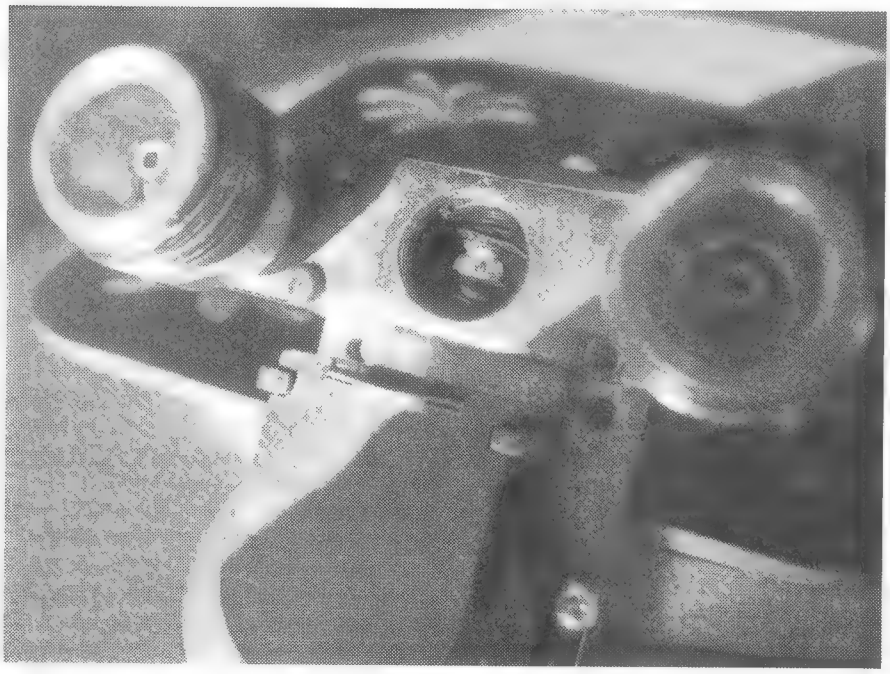


Fig. 3. The Inside of the Antenna Relay

The Aftermath

Rebuilding the station took several months and a lot of work, but I took the opportunity to change over from using a VHF transceiver to a transverter with a decent HF transceiver, an arrangement that gives me a much better receive system and improved frequency stability. The insurance assessor was to my great relief very helpful and sympathetic; one hears so many stories where this has not been the case.

I have completed the bonding of all three earth points in the system, using the heaviest gauge copper wire that I could afford! The three earths are of course the tower earth, the shack earth, and the mains earth at the point of entry into the building. I have spent some time improving the first two of these earths, and intend to add still further earth points to the tower since the ground is dry and stony, with solid rock quite close to the surface.

We have now fitted surge arrestors to both the house and the shed switchboards. I have competed an earthed patch panel in the window of the shack, at which all antenna cables and elevator/rotator control cables can be easily and quickly disconnected, and whenever I am away from the shack I disconnect all these cables as well as removing all mains plugs from the wall (except the station clock). It takes two or three minutes to do this, but I have no intention of being taken down again by anything less than a direct lightning strike. There is still of course the possibility of direct wind damage to the antennas and tower, but that is a normal risk of weak-signal work – if it doesn't fall down sometimes, then it isn't big enough!

Note: This article was previously published in "GippsTech2005: Proceedings from the eighth annual Gippsland Technical Conference, 9/10 July 2005".

ar

News from...

VK7

Justin Giles-Clark VK7TW
Email: vk7tw@wia.org.au Regional Web Site: reast.asn.au

BPL issues raised at Government hearings

The Tasmanian House of Assembly, Government Businesses Scrutiny Committee hearings in July saw a number of questions raised about the BPL trials by Mr Will Hodgman MHA, the leader of the Opposition. Dr Davis, CEO Aurora Energy, commented that he thought they had around 300 customers and admitted that they have had some technical challenges with the trial. The issue of interference was raised and the discussion wrapped up with an outline of the ACMA's role in complaint management and interference resolution and it was good to see that Minister David Llewellyn MHA remembered some radio theory from his past in Telecom (HI HI).

Latest BPL emission reports released

The third round of measurements have just been released from the Tasmanian BPL trial from the Mt Nelson, Tolmans Hill, North Hobart, Mount Stuart and West Hobart trial areas. A second round of measurements was also taken in Burnie on the North West coast of Tasmania. These are available at: http://reast.asn.au/vk7bplwatch.php#emissionmeasurements. The measurements used the FSM software developed by Owen Duffy, VK1OD and the measurements confirm there is still a severe degradation of the noise floor in the trial areas.

New 160 metre net in Southern Tasmania

A new 160-metre net on 1.840 MHz AM at 1645K on Tuesdays, Wednesdays and Thursdays. Dave VK7DM is the net controller and takes reports and callbacks on 1.840 MHz or on VK7RAD/RHT (146.700/146.850).

North West Tasmanian Amateur Radio Interest Group

The Marconi Centenary Celebrations in Devonport from the 12-16 July went very well with the Devonport Maritime Museum filled to overflowing for the official re-enactment. There was an exchange of messages between Governors and officials in VK3 and VK7. Messages came from the Premier and Opposition and the highlight was a very special recorded message from Guglielmo Marconi's daughter Princess Elettra Marconi. Special events stations VI7MC and VI3MC operated throughout the celebrations.

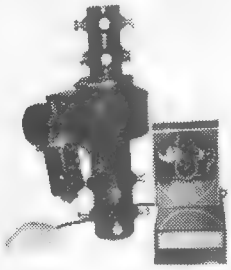
Northern Tasmania Amateur Radio Club

Thanks to Joe VK7JG and Tony VK7YBG for getting the Barren Tier link repeater back on the air. Joe, Alan VK7ZAR and a number of other helpers have been also undertaking the upgrade of VK7REC on Snow Hill in the South East and this repeater is back to its usually state-wide coverage.

Congratulations to Dale Wright, Paul Blundell and Leon Atkins for passing their Foundation Exam. By the time you read this, they will no doubt have their callsigns and be on the air.

From L to R: Devonport Mayor Lynn Laycock, Governor William Cox AC, RFD, ED and Tony Bedelph, VK7AX

OzSpid Rotators



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Radio and Electronics Association of Southern Tasmania

IRLP node 6720 is now available on repeaters VK7RAD/RHT (146.700/146.850). We welcome our new REAST Treasurer, Scott VK7FREK, who brings a wealth of experience from the public finance sector.

Thirty eight WICEN members were deployed on the 2006 Subaru Safari over 15-16 July 2006. This event is different from Targa Tasmania in that there are short bursts of fast-paced activity and an opportunity to get out into the forests! 20 stations were operated, plus Command and repeaters. APRS was successfully trialled using a shared voice channel to track the Zero car's location around the course.

Our octogenarian go-getters: John VK7JK turned 83 and Charles VK7PP turned 80 in the last month and it's definitely a case of 80 years young! John still reads the VK7 Regional News broadcast and Charles is regularly involved in FL training and with the Travellers' Net.

Martin VK7GN, our resident hardcore DXer and contester, gave us a very interesting illustrated presentation called Optimised Radio which included location analysis, operating hints, contests and standard operation and that one key element in any contest is Score = BIC "bum-in-chair"! Thanks Martin.

Martin, VK7GN with his homebrew speech processor for the "G"!

VK3

Geelong Radio And Electronics Society

Rod Green VK3AYQ

Over the last three months, our members have enjoyed many interesting syllabus items. Murray VK3ACQ organized a visit to the TV service centre where he is a technician. The focus of the night was free-to-air digital television. The second visit did not involve electronics, but all who attended enjoyed an informative and educational tour of a vitreous enamelling factory.

A representative from "Jaycar" showed us how to make printed circuit boards. He demonstrated the correct method of using "Press n Peel" film. A complete PCB was made on the night and the finished board was certainly of commercial quality. This method of manufacture will certainly be of great use to those who "roll their own", particularly those who like to produce boards populated with surface mount components. Another interesting evening was a discussion on the uses of Picaxe micro-controller chips. Neil VK3XNH explained how he developed a circuit to keep a second battery charged in his utility.

We had one practical evening where members constructed a small low power FM transmitter. The main purpose of the evening was to make certain that the circuit worked reliably. As the circuit was reliable, John VK3TKH held two practical evenings for a local Scout group. The Scouts constructed their own transmitters under the guidance of John, Keith VK3XKS and Neil VK3XNH. The Scouts deemed these practical evenings to be a great success, and they have become a regular activity for the Scouts.

John VK3TKH and Keith VK3AFI have continued to run classes and exams for all levels of amateur licences. These classes have been conducted on both our regular meeting nights and midweek on an afternoon. So far, we have had new licensees in all classes of amateur licence.

Our daytime Wednesday group continues to meet each week. This group works on specific club projects. In addition, the computer group meets on the first and third Friday of each month. The numbers attending each group are increasing.

Visitors to Geelong are welcome to attend our weekly meetings. These are held at 237A High St., Belmont. Meetings start at 2000 Hrs every Thursday.

Silent Key

Ken Saxon VK7AI

Ken was born in 1922 and grew up on his father's farm at Henrietta, just south of Yolla in North-West Tasmania. At an early age, he developed an interest in 'wireless' and would catch and sell rabbits so he could afford to buy parts. He gained his Amateur Licence in 1937 at the age of 15, remarkable at that time. In the Second World War, Ken joined the Royal Australian Air Force. Eventually, he was posted to Egypt, supporting Montgomery in the pursuit of Rommel in North Africa. Here he 'acquired' a short-wave radio and would use it at night in his tent to secretly tune the bands. Recently, he donated that radio to the Australian War Memorial in Canberra. In the 1950s, he became interested in the new mode of 'single sideband suppressed carrier' and built his own transmitter, when few had heard of SSB. Ken was a reserved man, a true gentleman who will be sadly missed. Vale Ken VK7AI.

(Submitted by Winston VK7EM)

News from...

VK3

Amateur Radio Victoria News

Website: www.amateurradio.com.au
Email: arv@amateurradio.com.au
Barry Robinson VK3JBR

CommGames QSL Cards

A set of four QSL cards, two each for AX3MCG and AX3GAMES, was printed last month and many have been despatched in response to the many direct and bureau cards that have arrived.

These two callsigns were put on air during the XVIII Commonwealth Games Melbourne logging more than 7,000 contacts with over 150 DX countries during March this year.

They have become Australia's most successful special event callsign activity ever. A sincere thank you to the members involved.

Two of them, Peter Forbes VK3QI and David McAulay VK3EW, not only operated AX3MCG but also handled the QSLing for both special callsigns.

Super September

Amateur Radio Victoria has decided to double its education efforts in September by scheduling two Foundation Licence Training and Assessment weekends.

It asks its members for assistance by encouraging a relative, friend or workmate to take the step and join the wonderful activity of amateur radio.

Can we achieve 20 new radio amateurs in the same month to add to the 100 already assisted through the ARV sessions to get their callsigns since they began in November 2005?

The dates are 9-10 September and 23-24 September. For inquiries or to enrol contact - Barry Robinson VK3JBR 0428 516 001 or arv@amateurradio.com.au

95th Anniversary

The Amateur Wireless Society of Victoria (now Amateur Radio Victoria) was formed on 30 November, 1911. Thoughts are being given as to how to celebrate its 95th anniversary.

Members are invited to put forward their ideas, which will be considered at the next meeting of the Amateur Radio Victoria Council.

Getting radio into schools

Only a few members have so far made further inquiries about the Amateur Radio Victoria offer to help introduce the Foundation Licence to schools.

The key to getting it into schools seems to be the use of an 'insider' to convince the school that the Foundation Licence is a worthwhile scholastic or self-development activity.

Amateur Radio Victoria will support its members for the rest of this calendar year 2006 by providing up to 10 Foundation Licence Manuals free directly to any school that commits to have a training course and assessment session.

F-Troop

A reminder that the F-Troop weekly Sunday net for Foundation Licensees is held at about 11.40 am through the Mt Macedon 2-metre repeater VK3RMM immediately after the broadcast call-back.

Net controllers Ross Pittard VK3FCE and Keith Proctor VK3FT will make all newcomers most welcome.

E-Member Services

To obtain email updates and access to the Members Only section of the Amateur Radio Victoria website, members need to register and provide their email address.

If you're a member and not e-registered, please help us to keep you informed by either visiting the website and registering online, or sending an email request for registration to arv@amateurradio.com.au

VK5

Adelaide Hills Amateur Radio Society

Christine Taylor VK5CTY

As usual, the Mid-year Dinner was a success. There were over fifty people present, with a number travelling from warmer climes. Judging from the noise and the fact that no one was in a hurry to go home, the food and the company were enjoyable.

This year we also had a meeting visit during July. About thirty members and their wives went to the Traffic Control Centre. Unfortunately we are no longer allowed to walk among the desks in the Centre but the talk we were given was most interesting.

We now understand the wide extent of traffic oversight. The South Eastern Freeway and the Southern Expressway are watched by cameras all the way. Nothing happens there that the Control Centre cannot overlook. In fact when someone called in recently to report an incident, while he was still on the phone the cameras were moved to view the incident in question, so that before the phone call ended the police and emergency services were activated.

One of the last displays we saw was actual movement of cars and the changing of lights happening at a particular intersection, as it happened. Our informant said it was very old technology that was bringing the images and information to the centre, but "if it ain't broke, why fix it?" It doesn't matter how old or new technology is, as long as it does what it is/was designed to do.

One corner of the working area was highlighted. It is a desk set up with a television camera where the person who tells us about the traffic each morning sits. He has all the most up to date information at his fingertips because he is in the place where it is all collated, moment-by-moment. What a great idea and so practical!

AHARS also had a construction evening where a group had the opportunity to make themselves a sewer pipe balun, under the eagle eye of experts. The photo shows some of the "experts" having a consultation.

There will be more construction nights in the coming months.

L to R: Jim VK5NB, Ted VK5 VK5KBM, and Rob VK5RG studying the plans

VK2

Tim Mills VK2ZTM

Clubs.

Early next month the Oxley Region ARC, based at Port Macquarie, will celebrate its 35th year. A lunch is planned in place of the usual monthly meeting. Last month they held their AGM with some change in the committee. Alan VK2GD is President, Bruce VK2HOT is Vice President, Jim VK2VIV became Secretary and John VK2KCE the Treasurer. The committee members are Bill VK2ZCV, Bill VK2ZCW and Henry VK2ZHE.

The St. George ARS, in southern Sydney, meet on the first Wednesday evening at the 1st Kyle Bay Scout Hall, Donnelly Park, Kyle Parade, Connells Point at 7.30 pm. The Blue Mountains ARC meets on the first Friday at the 1st Blaxland Scout Hall, Reading Street, Glenbrook. Also on the first Friday, the Orange and District ARC meet at 7.30 pm in the RAAF building, 64 Warrendine Street. Westlakes ARC are to conduct their "Westlakes Cup" on 80 metres on Saturday the 23rd September in the hour 20.30 to 21.30 EST.

ARNSW.

The Radio Veterans Group meets on the third Thursday morning at the Ryde Eastwood Leagues Club, 117 Ryedale Road, West Ryde. The Radio Experimenters and Home Brew Group

meet on the first Tuesday evening at McDonalds, North Parramatta. They hold a workshop in the afternoon of the Trash and Treasure event at Dural. This is the last Sunday of the odd month, which is this month, on the 25th. The July events were well attended. The Home Brew workshop was an interesting exercise when everybody took part in constructing an 80 metre loaded vertical antenna. Using bits and pieces of wood for the loading coil, a piece of aluminium tube for the top, building wire and energetic workers, they were on air within an hour, making a contact. At the same time, others worked on making up a half size loaded dipole for 160 metres. Hung up as an inverted vee, it too was soon operational. Still others checked out the balun kits that were part of the May workshop. All these workshop activities were carried out in the grounds of VK2WI. It is an opportunity for many to get some practical experience. Many in attendance are new "F" calls. A sausage sandwich with tea or coffee is available for lunch. See you on Sunday, the 25th for the next event.

A while ago in these notes, we advised that Jeff VK2BYY had turned his hand to being a author, with his first book "Barefoot Times". He has now produced his second book "Call of the Delphindae" and has a third forming up on the computer. The latest book is set in the same universe as Barefoot Times and it tells the story of Aaron's parents, Mary, a Delphindae priestess whose calling brings her to Earth, and Bobby, a technician from Narrabri in northwestern NSW. You can check out details on the second book at www.zeus-publications.com and the first at www.barefoottimes.net. During the late 70's and early 80's, Jeff was the Dural Engineer and built up VK2WI with new equipment and the current control system. Much of the equipment has since been upgraded, but the concept of the control consoles have remained. Work in the next few months will concentrate on overhauling and improving the antenna systems. A reminder to the broadcast team and anyone interested in helping out with the Sunday news sessions that John VK2JJV will be compiling the final quarter roster for the year during this month. We need more on the team to help share the workload.

73 - Tim VK2ZTM

ALARA

Christine Taylor VK5CTY

The Contest

As I am writing this before the event, I hope everyone had a good ALARA Contest. Hopefully the propagation was good and there were lots of stations on the air. The Contest is an excellent chance to talk to some of our members who do not often come on the air.

If everyone takes notice of the previous suggestions, our Award Manager, Kathy VK3XBA will be busy processing the applications.

DON'T FORGET TO SEND IN YOUR LOGS no matter how few the number of contacts you made, please send the log in to Marilyn VK3DMS QTHR or on line via

via *alaracontest@wia.org.au*

While you are re-writing your logs for Marilyn, why not do the same with your Remembrance Day logs. It really is important that the logs are sent to the Contest managers so they can be checked against each other.

The Birthday Net

Unfortunately, this was disappointing this year. Marilyn VK3DMS and Shirley VK5JSH had a lovely long chat but didn't hear any other stations. What a shame! If the same thing happens next year, I suspect the idea of wishing each other a "Happy ALARA Birthday" might become a thing of the past. It is certain that the committee will have a discussion about it.

The Birthday Luncheons

I have not heard about the Birthday Luncheon in VK6 (hint, hint), but it is usual for them to have a special Luncheon in July, so maybe there will be some stories or pictures in a later edition.

In VK5, the special Birthday Luncheon was very well attended. There were 13 YLs and 8 OMs at the Marion Hotel on July 30th. Everyone enjoyed it immensely.

Unfortunately, this year there was one empty chair. Janet VK5NEI was toasted by the YLs. We do not usually see Janet (and her lovely Dalmatians) for the rest of the year but she has not missed many Birthday Luncheons. She was missed.

To make it even more poignant, on the Monday morning, Jean VK5TSX received a thank you card for the family on which there was a picture of the sunrise taken on the morning of her death. Janet had only recently acquired a digital camera and was trying it out. When the family looked at the photos on the card

Back row: Myrna VK5YW, Tina VK5TMC, Sue Mahony, and Jeanne VK5OQ
Middle row: we have Meg VK5YG, Shirley VK5JSH, Christine VK5CTY and Jenny VK5ANW. Sue VK5AYL and Joy VK5YJ are between the middle & front rows.
Front row: Melanie VK5FMEL, Susie VK5FSUE (holding VK5GAL), Jean VK5TSX and Jenny VK5FJAY

they found this picture of the sunrise. She must have seen the beautiful colours and decided to try out the new toy.

Jean will show the card to the YLs at the regular Luncheon in August.

Monthly Luncheons

The VK5 luncheons are now held at the Museum Café. Myrna found the new venue but it has the approval of us all. There are usually eight or nine of us and sometimes more. In August we are having another Red Hat Day. The red hats were introduced to us at the ALARAMeet in Mildura, by Shirley VK5JSH, where they helped to relax the formality in a "nice way".

We do not wear purple dresses as the true Red Hat ladies do, but we do come up with some inventive red hats. If you do not know about the Red Hat Society perhaps you should look for some information about it.

In essence, once a lady (YL) reaches a certain age she should not feel hidebound by the conventions of "making a good impression" or "behaving properly". She should feel free to be a bit unconventional. If she feels like it she should wear a red hat and a purple dress, or in any other way, show her independence.

She has earned the right!

Foundation Licensees

We have been delighted to have a number of Foundation licensed YLs join the Monday Nets recently. Not only Jenny VK5FJAY, but also both her daughters, Melanie VK5FMEL and Amanda VK5FAAJ have been heard. Pam VK4ABB, who sometimes is in VK4 land and sometimes in VK2 land, just over the border has almost become a regular. We have heard Daina, and another Jenny. We have had a number of OM F calls join in, too. We welcome OMs into the ALARA Net although most of the stations are YLs. The conversation is very wide ranging.

One OM recently had a link with ALARA that was unexpected. He knew Clarice VK3UE and her OM from many years ago. ALARA recognised Clarice, some years ago as someone who had held an amateur licence for over 40 years. Few of us will ever achieve that distinction!

The travellers

Many amateurs are travelling at this time of the year. Listening in to the Travellers' Net at lunchtime is an excellent way to hear about interesting and often strange places in Australia.

But LARA was delighted recently to have June VK4SJ, who has helped run the 222 Net and is a very keen Dxer, and Maria VK5BMT, a long time 222 Net member, both call in to that net to let others know what they were doing and where they were.

The 222 Net is suffering from the poor propagation at the moment, but we hope for improvement in the next few years. If you join in there is usually someone you can talk to or who can hear to pass on greetings to stations you know are on the air but whom you cannot hear. Monday afternoon on 14.222 with call in from 0530 UTC.

You need never be lonely

As a radio amateur you need never be lonely. All you need to do is to turn on your rig and call "CQ". Someone else will be sitting at their rig too, and will be willing to talk to you.

You do not need to drive to a friend's house, or ring them up, maybe at an inconvenient time, you know they will also be sitting in front of the radio ready for the regular nets.

You don't need to talk on the net if you are not ready to do so but you can listen to the friendly voices and feel that they are not far away.

We have a great hobby!

ar

Silent key

Vince Nugent VK2ALZ

Tumut NSW

The death of long time and well known Ham Radio Operator Vince Nugent VK2ALZ at Tumut NSW occurred on 7 June 2006.

Vince was a senior member of the Wireless Institute of Australia and a regular participant on the Sunday Morning sked.

Originally from Bexley, Sydney, Vince was a senior technician for over 40 years with the PMG.

Vince was active on HF bands. He designed and built several antennas. He was an active member of the Tumut Radio Club and was widely known in south western NSW & the Riverina.

Vince was a member of the Old Timers Club and was very proud of his association with the older hams of that elite club.

Ham radio is a hobby that brings enjoyment to so many radio operators but nobody got more pleasure than did Vince Nugent.

Vince taught theory to many local amateurs, at the Tumut Club, when obtaining our amateur licenses, for which we are most grateful.

Vince is survived by Frances, and children Mark, John, Anne, Monica, Paul and Shelly and several grandchildren.

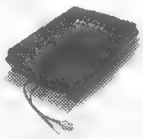
Vince's voice and call sign VK2ALZ and his sense of humour will be sadly missed by all.

The family and local amateurs are grateful to Allan VK2OA who helped to prepare the silent key notice.

Vale Vince.

submitted by AG (Ted) Dean VK2FUP

FEATURE TECH



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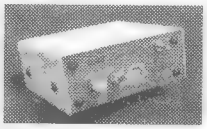

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Beyond our shores

David A. Pilley VK2AYD

We are important

Since Hurricane Katrina hit the Mississippi coast last year, the U.S. authorities are taking a new view of the benefits of Amateur Radio to the community and how it played an important part when communications were disrupted. Amateur Radio operators are now being recruited for special training for hospital communications.

When terrorists attacked trains in Mumbai, India, on July 11th, the cities cellular telephone network failed. Amateur Radio took over and today in Mumbai 'HAM' means "Help All Mankind". We are not just a hobby but a service provider in times of need.

New Zealand

The New Zealand Administration's Radio Spectrum Management group has advised NZART that the European Radiocommunications Office has advised the acceptance of the New Zealand application to participate in CEPT TR61-02 arrangements for mutual recognition of radio amateur operators certificates.

NZART's Administration Liaison Officer Fred Johnson ZL2AMJ says that New Zealand with its one-grade licence now has both TR61-01 and TR61-02 recognition and that this is a significant milestone and brings great international portability for the New Zealand qualification.

Other changes in New Zealand's Radiocommunications Regulations include a General Users Radio Licence for Amateur Radio Operators. This GURL is common to all New Zealand's Radio Amateurs and contains the terms, conditions and restrictions with which they work. Each Radio Amateur will have a General Amateur Operators Certificate of Competency that will carry the individual operator's unique Call-sign. The GURL provides for the ZL/ZM call-sign prefix facility to be decided by individual operators for contests and special events.

Nations agreeing to CEPT minute TR61-02 permit radio amateurs from other CEPT signatories to operate portable to the extent of the privileges and limitations on their home nation's licence.

(ZL2BHF via ARNewsline)

UK:

New regulations to permit remote operations

Remote operation will be a standard feature of the new United Kingdom Amateur Radio licence due to come into force on October 1st. After that date, U.K. full licensc class holders will be allowed to remotely control an unattended station for their personal use. For example, they could run a home station from elsewhere or operate a remote-base system located at another site.

The remote control link can be a simple radio system on permitted Amateur frequencies. Or, it can use any publicly available system including dial-up, I.S.D.N., the Internet or even Wi-Fi. In addition, all U.K. licensed amateurs will be allowed to remotely control their station within a range of 100 metres. Under the new licence structure, this will not be regarded as unattended operation.

(GB2RS).

Ireland:

IRTS wants 500 kHz

The Irish Radio Transmitters Society has applied to Ireland's Telecommunications regulator ComReg for a small allocation in the region of 500 kHz, for use by Amateur Radio experimenters.

The move follows a similar proposal made by the Radio Society of Great Britain to U.K. regulator Ofcom in 2004. Ofcom has not yet made a decision on the RSGB proposal but the Society is hopeful of an allocation between 501 and 504 kHz.

The GB2RS News Service says that there is a possibility that Ofcom might designate the spot frequency of 500 kHz a maritime memorial frequency. In recent years, there has been little traffic on the band 415 to 526.6 kHz, after most countries stopped using it as a Morse emergency maritime frequency in the 1990s.

(IRTS)

Libya: November operation allowed

Following years of silence, an international team of operators will activate Libya from November 14th to 28th.

The goals of this DXpedition are to support the development of amateur radio in Libya while bringing a rare country onto the airwaves.

Activity will be on all bands running CW, SSB, FM, RTTY, SSTV and PSK. The operators hope to provide more than 50,000 QSOs during the 14-day operation using the callsign 5A7A.

They also plan to take part in CQWW DX CW Contest as a Multi/Multi entry.

ar

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Robin L. Harwood VK7RH

Stormy times

I have not been doing much listening this month, as I have been caught up by activities away from the radio. I did manage to hear the historic re-enactment of the first wireless communications across Bass Strait on 12th July. It was so disappointing that there was deliberate interference to the short transmission. I expect there will be further coverage of the activities elsewhere in this journal.

In late June, the Middle East again erupted in War, following the kidnapping by Hamas and Hezbollah of Israeli soldiers. Naturally, this led to immediate hostilities that are still ongoing as I write this report. Shortwave broadcasts escalated as domestic senders were destroyed, particularly in Lebanon.

Tens of thousands were evacuated out of the conflict zone. Sadly, the innocent civilians have been the main casualties on both sides.

Syria is involved in this crisis, yet it has been almost impossible to hear their external programs due to extremely poor modulation. They are supposed to be on 12085 but all I hear is often hum and unintelligible audio. Iran is reportedly a backer of Hezbollah and there has been an increase in the output of Radio Farda, the American clandestine station. I have heard them on 7590 from time to time.

I also have heard the Chinese firedrake jamming station on 14260 at 1010.

Why they are in exclusive amateur bands has been a mystery but they are probably jamming a station on 7130. Taiwan has operated on that channel for many decades and the Chinese may be overdriving their jammer.

Radio Japan may be the next station to quit shortwave. Broadcasts to Europe are reported to be slashed, particularly French, German and other languages, yet excluding Japanese and English. It is believed that the European audience has significantly decreased in size and broadcasts cannot be economically justified. Radio Korea may also follow this trend.

Apparently, several former Soviet republics have decided to discontinue relays of international stations via medium and shortwaves. Both Armenia and Uzbekistan have notified their clients that the facilities will no longer be available. Both countries also announced they are also suspending shortwave relays of their domestic programming.

You may have noticed in the press that Telstra have suspended their plans to develop a fibre optic network for "Broadband". As the government has been promoting the benefits for rural areas for the fibre optic technology, the idea of BPL becomes more attractive to fulfil the need for Broadband. Here in Tasmania, we have had ongoing trials of BPL but this may increase if Telstra indeed does not roll out the fibre optic network.

(These developments are interesting; especially as the current Australian "Broadband" technologies available outside of fibre optic and coaxial cable service areas do not begin to approach the speeds of delivery that are recognised internationally as Broadband. In addition, costs are comparatively very high in Australia. One must really wonder about the future of telecommunications delivery within Australia. Editor.)

The American FCC also recently re-affirmed their support for BPL, despite considerable opposition from amateurs and other HF users .It really is depressing for the future of our hobby.

Niger is a country in West Africa that has recently returned to shortwave. I believe that it has been heard on 9705 at 2100 in French and local languages.

However, Ethiopia has also been known to use this channel so just do not assume it is Niger.

Nigeria, which is next door, has been heard on 15120 in English, Hausa and French from 0600 until 2100.

Well that is all for this month. Until next time, the very best of monitoring and 73 - Robin L. Harwood VK7RH

ar

Radio Amateurs Old Timers Club (South Australia)

The Annual Luncheon

will be held on

Thursday, 26th October 2006

(12 noon for 12.30 pm lunch)

Please bring your Seniors Card.

***Venue*: Marion Hotel, Marion Road, Mitchell Park**

Public transport Bus 243, stop 24.

RSVP to one of the following committee members before 22nd October 2006:

President: Jim McLachlan VK5NB - phone 8294 2992

Secretary: Ray Deane VK5RK - phone 8271 5401

Assistant Secretary: Ron Coat VK5RV - phone 8296 6681

Gridsquare Standings at 4 August 2006

Guy VK2KU

144 MHz Terrestrial

VK2FLR	Mike	113
VK3NX	Charlie	104
VK2KU	Guy	102
VK3KAI	Peter	81
VK2ZAB	Gordon	78 SSB
VK2KU	Guy	69 SSB
VK3HZ	David	69
VK3CY	Des	68
VK3PY	Chas	68 SSB
VK2DVZ	Ross	63 SSB
VK2TK	John	62
VK3EK	Rob	62 SSB
VK3QM	David	56 SSB
VK2EI	Neil	54
VK3TMP	Max	53
VK7MO	Rex	53
VK3BJM	Barry	52 SSB
VK3BDL	Mike	51 SSB
VK3ZLS	Les	51 SSB
VK3KAI	Peter	48 SSB
VK2DXE	Alan	47
VK2KU	Guy	47 Digi
VK3WRE	Ralph	46 SSB
VK4TZL	Glenn	45
VK2DXE	Alan	43 SSB
VK4CDI	Phil	41
VK3CAT	Tony	40
VK3KEG	Trevor	39
VK3KAI	Peter	36 Digi
VK2TK	John	35 SSB
VK4KZR	Rod	35
VK7MO	Rex	35 Digi
VK3ZUX	Denis	33 SSB
VK6HK	Don	33
VK7MO	Rex	33 SSB
VK3ZYC	Jim	31
VK2KRR	Leigh	28 FM
VK3CJK	Chris	28 SSB
VK4CDI	Phil	28 SSB
VK2TK	John	27 Digi
VK2EAH	Andy	26
VK4DFE	Chris	26 SSB
VK5ACY	Bill	26 SSB
VK2TG	Bob	25 SSB
VK3BBB	Brian	25
VK1WJ	Waldis	24
ZL3TY	Bob	24
VK3DMW	Ken	23
VK3YB	Phil	23
VK4EME	Allan	23
VK3HV	George	21 SSB
VK3TLW	Mark	20 SSB
VK3VHF	Rhett	20 SSB
VK6KZ	Wally	20
VK1WJ	Waldis	18 Digi
VK3AL	Alan	18 SSB
VK3BG	Ed	17 SSB
VK6KZ/p	Wally	16
VK2EAH	Andy	15 SSB
VK3ZYC	Jim	14 SSB
VK4EME	Allan	14 Digi
VK3UDX	Geoff	13 SSB
VK4CDI	Phil	13 Digi
VK2CZ	David	12
VK7ZSJ	Steve	12
VK2EAH	Andy	11 Digi
VK2EI	Neil	11 Digi
VK3VHF	Rhett	11 Digi
VK2DXE/p	Alan	10
VK3ANP	David	10
VK4EME	Allan	9 SSB
VK6DXI	Mirek	6
VK6HK	Don	6 Digi
VK1WJ	Waldis	5 SSB
VK2TWO	Andrew	5
VK3ZDR	David	5 SSB
VK1WJ	Waldis	3 CW
VK2DXE	Alan	3 Digi
VK4TJ	John	3 SSB
VK3QM	David	1 Digi

144 MHz EME

VK2KU	Guy	210
ZL3TY	Bob	208
VK2KU	Guy	193 Digi
VK7MO	Rex	154 Digi
VK2FLR	Mike	120
VK3CY	Des	70 CW
VK3AXH	Ian	60 Digi
VK2AWD	Dave	52 Digi
VK2KU	Guy	39 CW
VK2KRR	Leigh	30
VK4CDI	Phil	30
VK3HZ	David	14
VK3NX	Charlie	5
VK3KEG	Trevor	4
VK3VHF	Rhett	4
VK2DVZ	Ross	2
VK2DXE	Alan	2
VK3AXH	Ian	2 CW
VK4EME	Allan	1 Digi

432 MHz Terrestrial

VK2ZAB	Gordon	57 SSB
VK3PY	Chas	50 SSB
VK3NX	Charlie	48
VK3QM	David	47 SSB
VK3ZLS	Les	40 SSB
VK2KU	Guy	38
VK2KU	Guy	34 SSB
VK3EK	Rob	34 SSB
VK3HZ	David	34
VK2DVZ	Ross	32 SSB
VK3BJM	Barry	32 SSB
VK3CY	Des	32
VK3KAI	Peter	29
VK3KAI	Peter	28 SSB
VK3BDL	Mike	27 SSB
VK3WRE	Ralph	26 SSB
VK3TMP	Max	25
VK3KEG	Trevor	21
VK2TK	John	18
VK7MO	Rex	18
VK2TK	John	17 SSB
VK3CAT	Tony	16
VK3ZUX	Denis	15 SSB
VK3BG	Ed	14 SSB
VK4KZR	Rod	14
VK3TLW	Mark	13 SSB
VK4TZL	Glenn	13
VK6KZ	Wally	13
VK2KRR	Leigh	11 FM
VK3UDX	Geoff	11 SSB
VK3AL	Alan	10 SSB
VK3ANP	David	10
VK3YB	Phil	10
VK4CDI	Phil	10
VK2TG	Bob	9 SSB
VK3BBB	Brian	9
VK4CDI	Phil	9 SSB
VK4DFE	Chris	9 SSB
VK3CJK	Chris	8 SSB
VK3VHF	Rhett	8 SSB
VK6KZ/p	Wally	8
VK2FLR	Mike	6
VK6DXI	Mirek	6
VK7MO	Rex	6 Digi
VK2KU	Guy	5 Digi
VK3HV	George	5 SSB
VK3KAI	Peter	4 Digi
VK3PY	Chas	4 Digi
VK3QM	David	4 Digi
VK3ZYC	Jim	4 SSB
VK4EME	Allan	4 SSB
VK1WJ	Waldis	3 SSB
VK2CZ	David	3
VK2TWO	Andrew	3
VK2DXE/p	Alan	2
VK3DMW	Ken	2
VK4TJ	John	2 SSB
VK2TK	John	1 Digi
VK3VHF	Rhett	1 Digi
VK4CDI	Phil	1 Digi

432 MHz EME

VK4KAZ	Allan	14 CW
VK7MO	Rex	10
VK7MO	Rex	9 Digi
VK3NX	Charlie	5
VK3HZ	David	4
VK4CDI	Phil	4
VK2KRR	Leigh	1
VK3AXH	Ian	1 Digi

1296 MHz Terrestrial

VK3QM	David	37 SSB
VK3PY	Chas	36 SSB
VK3NX	Charlie	34
VK2ZAB	Gordon	29 SSB
VK3ZLS	Les	26 SSB
VK2KU	Guy	25
VK2KU	Guy	22 SSB
VK3EK	Rob	20 SSB
VK3KAI	Peter	20
VK3KAI	Peter	19 SSB
VK3KWA	John	19
VK2DVZ	Ross	17 SSB
VK3WRE	Ralph	16 SSB
VK3BDL	Mike	12 SSB
VK3BJM	Barry	12 SSB
VK3HZ	David	11
VK3TMP	Max	11
VK2TK	John	10 SSB
VK4KZR	Rod	10
VK7MO	Rex	10
VK3BG	Ed	8 SSB
VK3TLW	Mark	8 SSB
VK3AL	Alan	7 SSB
VK3UDX	Geoff	6 SSB
VK4TZL	Glenn	6
VK2CZ	David	5
VK3HV	George	5 SSB
VK3ZUX	Denis	5 SSB
VK3ZYC	Jim	5
VK6KZ/p	Wally	5
VK2KRR	Leigh	4
VK3BVP	Shane	4
VK3VHF	Rhett	4 SSB
VK3YB	Phil	4
VK3ZYC	Jim	4 SSB
VK4CDI	Phil	4
VK6KZ	Wally	4
VK2KU	Guy	3 Digi
VK3BBB	Brian	3
VK3KEG	Trevor	3
VK4CDI	Phil	3 SSB
VK6DXI	Mirek	3
VK2DXE/p	Alan	2
VK2FLR	Mike	2
VK3CJK	Chris	2 SSB
VK3CY	Des	2
VK3KAI	Peter	2 Digi
VK3QM	David	2 Digi
VK4TJ	John	2 SSB
VK3DMW	Ken	1
VK3ZYC	Jim	1 Digi
VK4CDI	Phil	1 Digi
VK7MO	Rex	1 Digi

1296 MHz EME

VK7MO	Rex	12
VK7MO	Rex	11 Digi

2.4 GHz

VK3PY	Chas	14 SSB
VK3QM	David	14 SSB
VK3NX	Charlie	11
VK3WRE	Ralph	9 SSB
VK3KAI	Peter	7 SSB
VK3EK	Rob	5 SSB
VK3HV	George	4 SSB
VK3HZ	David	4
VK6KZ	Wally	4
VK3BJM	Barry	3 SSB
VK3KAI	Peter	2 Digi
VK3VHF	Rhett	2 SSB
VK4KZR	Rod	2
VK2DVZ	Ross	1 SSB
VK3BG	Ed	1 SSB
VK3TLW	Mark	1 SSB
VK3ZUX	Denis	1 SSB
VK4TZL	Glenn	1

3.4 GHz

VK3NX	Charlie	11
VK3QM	David	9 SSB
VK3KAI	Peter	6 SSB
VK3WRE	Ralph	6 SSB
VK3HV	George	4 SSB
VK6KZ	Wally	4
VK3EK	Rob	3 SSB

5.7 GHz

VK3NX	Charlie	12
VK3WRE	Ralph	9 SSB
VK3QM	David	8 SSB
VK3KAI	Peter	7 SSB
VK6KZ	Wally	4
VK3BJM	Barry	2 SSB
VK3EK	Rob	2
VK3HV	George	2 SSB
VK3KAI	Peter	2 Digi
VK6BHT	Neil	2 SSB
VK3ZUX	Denis	1 SSB

10 GHz

VK3NX	Charlie	11
VK3QM	David	11 SSB
VK3KAI	Peter	9 SSB
VK3PY	Chas	9 SSB
VK6BHT	Neil	9 SSB
VK3WRE	Ralph	8 SSB
VK3EK	Rob	5 SSB
VK6KZ	Wally	5
VK3HV	George	4 SSB
VK3HZ	David	4
VK3TLW	Mark	3 SSB
VK3ZYC	Jim	3 SSB
VK5ACY	Bill	3 SSB
VK2EI	Neil	2 SSB
VK3BJM	Barry	2 SSB
VK3DMW	Ken	2
VK3ZUX	Denis	2 SSB
VK7MO	Rex	2
VK3BG	Ed	1 SSB
VK4KZR	Rod	1
VK4TZL	Glenn	1

24 GHz

VK6BHT	Neil	3 SSB
VK2EI	Neil	2 SSB
VK3NX	Charlie	2
VK6KZ	Wally	2

474 THz

VK3CJK	Chris	2
VK7MO	Rex	1

Additions, updates and requests for the guidelines to Guy VK2KU, vk2ku@clearmail.com.au, or by mail (QTHR 2005).

The guidelines (and the latest League Table) are also available on the website of the NSW VHF DX Group at www.vhfdx.radiocorner.net - click on Gridsquares.

Next update of this table will be in early November 2006.

Stations who do not confirm their status for more than 12 months may be dropped from the table.

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Ian Godsil VK3JS
Contests Manager

Contest Calendar September - November 2006

Sep	2	Russian Radio RTTY Contest	(RTTY)
	2/3	All Asian DX Contest	(SSB)
	9/10	Worked All Europe DX Contest	(SSB)
	23/45	CQ WW RTTY DX Contest	(RTTY)
	23	Westlakes Cup	(SSB/DSB/AM)
Oct	7	PSK31 Rumble	(PSK)
	7/8	Oceania DX Contest	(SSB)
	14/15	Oceania DX Contest	(CW)
	9	10-10 International Day Sprint	(All Modes)
	14/15	JARTS WW RTTY Contest	(RTTY)
	15	Asia-Pacific Sprint Contest	(CW)
	15	RSGB 21/28 MHz Contest	(CW)
	21	RAOTC QSO Party	(CW/SSB/FM)
	28/29	CQ WW DX Contest	(SSB)
Nov	11/12	Japan Intl. DX Contest	(SSB)
	11/12	Worked All Europe DX Contest	(RTTY)
	25/26	CQ WW DX Contest	(CW)

VK trans-Tasman 160 m PHONE Results

Bruce Renn VK3JWZ
Contest Manager
vktasman@hotmail.com

The VK/ trans-Tasman Contests 160M PHONE Results have now been published on the Contest website: ***http://home.iprimus.com.au/vktasman***

The winner of the 160 metres Trophy (for Overall Winner), is RON TREMAYNE (VK3IO), from Cockatoo, VIC. He also won the certificate for 1st PHONE, and may be among the winners in the 160 m CW (yet to be announced).

2nd PHONE went to Ron Falconer ZL4RMF, in his first VK/ trans-Tasman effort. Unfortunately for Ron, his log score was reduced by application of the performance factor, leaving him just 34 points below VK3IO's score.

Equal 3rd went to Club station VK2ATZ (Westlakes ARC, Newcastle) and, to VK2CZ David Burger, St Leonards, NSW. VK2ATZ's score was 27 points higher than VK2CZ, but under the Multi-operator rule, did not have the 100 point margin required to claim the outright prize.

1st QRP PHONE went to VK3AAK (Michael Coleman). There were only 2 QRP stations in the Contest.

The number of participating stations and number of logs received, while well up on the first year of this Contest in 2004, was significantly lower than last year.

Propagation was poor although there was no QRN.

73, Bruce Renn VK3JWZ

Local Contests coming

23 September — **Westlakes Cup** — **— Ideal Foundation starter**

21 October — **RAOTC 30th Anniversary** — **— open all ages**

ROSS HULL in DECEMBER

Results CQ RTTY WPX 2006

(VKs only Call\Cat.\Score)

VK6GOM	SOAB High Power	124,509
VK3FM	SOAB High Power	10,325
VK2KM	SO 40 metres	193,052

Spring VHF-UHF Field Day 2006

John Martin VK3KWA
Contest manager

Changes in this year's Contest

For this contest the maximum operating period for stations in Sections B and D has been changed from 6 hours to 8 hours. This will allow stations in these two Sections to work other stations three times during their period of operation, rather than only twice as in previous Field Days.

Dates

Saturday and Sunday November 11 and 12, 2006.

Duration in all call areas other than VK6:	0100 UTC Saturday to 0100 UTC Sunday.
Duration in VK6 only:	0400 UTC Saturday to 0400 UTC Sunday.

Sections

A: Portable station, single operator, 24 hours.
B: Portable station, single operator, 8 hours.
C: Portable station, multiple operator, 24 hours.
D: Portable station, multiple operator, 8 hours.
E: Home station, 24 hours.

Single operator stations may enter both Section A and Section B. If the winner of Section A has also entered Section B, his log will be excluded from Section B. The same applies to the winner of Section C if the station has also entered Section D.

General Rules

A station is portable only if all of its equipment is transported to a place which is not the normal location of any amateur station. Operation may be from any location, and stations may change location during the Field Day. You may work stations within your own locator square. Repeater, satellite and crossband contacts are not permitted.

One callsign per station. If two operators set up a joint station with shared equipment, they may choose to enter Section A or B as separate stations under their own callsigns, or Section C or D under a single callsign. If they enter Section A or B, they may not claim contacts with each other. Stations with more than two operators must enter Section C or D. Operators of stations in Section C or D may not make contest exchanges using callsigns other than the club or group callsign.

No contest operation is allowed below 50.150 MHz. Recognised DX calling frequencies must not be used for any contest activity. Suggested procedure is to call on .150 on each band, and QSY up if necessary.

Contest Exchange

RS (or RST) reports, a serial number, and your four digit Maidenhead locator.

Repeat Contacts

Stations may be worked again on each band after three hours. If the station is moved to a new location in a different locator square, repeat contacts may be made immediately. If the station moves back into the previous locator square, the three hour limit still applies to stations worked from that square.

Scoring

For each band, score 10 points for each locator square in which your station operates, plus 10 points for each locator square worked, plus 1 point per contact. Multiply the total by the band multiplier as follows:

6 m	2 m	70 cm	23 cm	Higher
x 1	x 3	x 5	x 8	x 10

Then total the scores for all bands.

Logs

Logs should cover the entire operating period and include the following for each contact: UTC time, frequency, station worked, serial numbers and locator numbers exchanged, points claimed.

Cover Sheet

The cover sheet should contain the names and callsigns of all operators; postal address; station location and Maidenhead locator; the section(s) entered; the scoring table; and a signed declaration that the contest manager's decision will be accepted as final.

Please use the following format for your scoring table. In this example the operator has operated from one locator and worked four locators on each band:

Band	Locators Activated (10 points each)	+	Locators Worked (10 points each)	+	QSOs (1 point each)	x	Multiplier	=	Band Total
6 m	10	+	40	+	40	x	1	=	90
2 m	10	+	40	+	30	x	3	=	240
70 cm	10	+	40	+	20	x	5	=	350
Overall Total								=	680

A sample cover sheet and scoring table is available on the WIA web site. Copies can also be obtained from the e-mail address given below.

Entries

Paper logs may be posted to the Manager, VHF-UHF Field Day, 3 Vernal Avenue, Mitcham, Vic 3132.

Electronic logs can be emailed to vhf-contests@wia.org.au. The following log formats are acceptable: ASCII text, MS Office RTF, DOC, XLS or MDB (Format - Office 2000 or earlier).

Logs must be received by Monday, November 27, 2006. Early logs would be appreciated.

ar

WIA VHF-UHF FIELD DAY

Section entered:

- ☐ **A** Single operator 24 hours
- ☐ **B** Single operator 8 hours
- ☐ **C** Multi operator 24 hours
- ☐ **D** Multi operator 8 hours
- ☐ **E** Home station 24 hours

If entering more than one section, please use a separate copy of this sheet for each section.

For Section B or D, time period to be scored:

The station operated from the following grid locators:

Date:

Station callsign:

Callsigns and names of all operators:

Postal address for notification of results:

Postcode:

The station was operated in accordance with the rules and spirit of the contest. I / We agree to accept the Contest Manager's decision as final.

Signed: _____

SCORING TABLE

Band	Locators Activated 10 points each		Locators Worked 10 points each		QSOs made 1 point each		Total		Band Multiplier		Band Total
50 MHz		+		+		=		x	1	=	
144 MHz		+		+		=		x	3	=	
432 MHz		+		+		=		x	5	=	
1296 MHz		+		+		=		x	8	=	
2.4 GHz		+		+		=		x	10	=	
3.4 GHz		+		+		=		x	10	=	
5.7 GHz		+		+		=		x	10	=	
10 GHz		+		+		=		x	10	=	
Higher		+		+		=		x	10	=	

FINAL TOTAL = _____

2006 160 metre VK/trans-Tasman Contest

Bruce Renn VK3JWZ
Contest Manager

Complete Results

"Participation factor"

PHONE:

42 ZLs, and 108 VKs participated. 42/108 = 0.3981

All ZL "overseas contacts points (not prefix groups), were reduced by multiplying by 0.3981.

CW:

15 ZLs, and 30 VKs participated.

15/30 = 0.50

All ZLs contacts with VKs (not incl "call prefix groups" bonus), were multiplied by 0.50

Category 6 (Phone)

	Call sign	Score	Contacts
1st.	VK3IO	1147	153
2nd.	ZL4RMF	1113	118
Equal 3rd.	VK2ATZ (multi-op)	800	154
Equal 3rd.	VK2CZ	773	135
5th.	VK7VH	768	120
6th.	ZL4AA	714	87
7th.	ZL3UR	673	95
8th.	VK2ADB	655	108
9th.	ZL2AGD	606	82
10th.	VK3FRC (multi-op)	577	118
11th.	ZL2RC	551	69
12th.	ZL2CC	528	76
13th.	VK4WR	524	97
14th.	ZL2KO	435	62
15th.	VK2BI	424	56
16th.	VK3AAK/Q	397	66
17th.	VK4QD (multi-op)	362	102
18th.	VK5LA/Q	340	48
19th.	ZL3TT	312	44
20th.	VK2GR	276	68
	VK3JWZ	267	63
21st.	VK7CK	234	54
22nd.	ZL1ALZ	186	26
23rd.	ZL2MS	181	24
24th.	VK2JNA	163	54
25th.	VK7ARN	105	29
26th.	ZL4IM	98	14
27th.	VK3AMW	58	21
28th.	VK2ZEN	50	21
29th.	VK2WL	40	20
30th.	VK4SN	28	14

Don't just sit there twiddling your dials.

Get in the contest, any contest

Category 7 (QRP Phone)

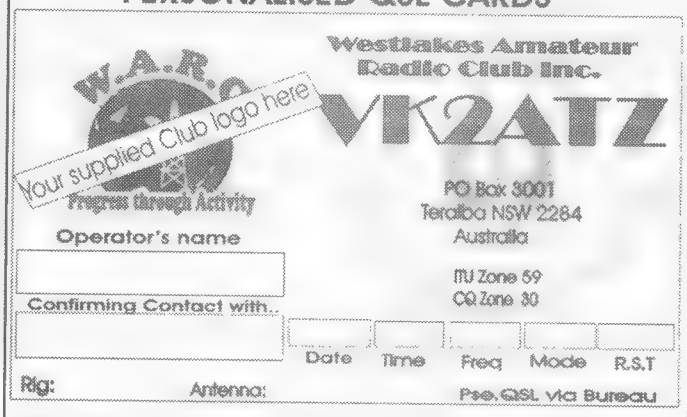
	Call sign	Score	Contacts
1st.	VK3AAK	397	66
2nd.	VK5LA	340	48

Category 8 (CW)

	Call sign	Score	Contacts
1st.	ZL6QH	838	91
2nd.	ZL3IX	787	89
3rd.	VK2BJ	737	81
4th.	ZL4AA	724	80
5th.	VK2BPL	722	84
6th.	VK3IO	717	80
7th.	ZL3ARC	552	66
8th.	VK7GN	512	57
9th.	VK2AWD	510	70
10th.	ZL1NI	457	55
11th.	VK3OZ	439	63
12th.	VK2GR	416	56
13th.	VK3FGE	412	56
14th.	VK3DID	353	52
15th.	ZL4IM	241	31
16th.	VK4TGL/Q	182	31
17th.	ZL2CD	173	25
18th.	VK4SN	169	22
19th.	VK7RO	105	15
20th.	ZL2ALJ	104	14
21st.	ZL1ALZ	96	12
22nd.	VK2CJC	25	7

Note: VK3JWZ (Contest Manager) Cat 1 Phone score of 267 is ineligible.

PERSONALISED QSL CARDS



Personalised QSL cards bearing your callsign, Club's name and supplied logo. White gloss card, full colour with WIA logo watermark if a WIA member. Alternative microphone if not. 25 cents per card Orders in batches of 4, Minimum order 40 cards. plus postage.
Email: flusa@optusnet.com.au with details

This is a Westlakes Amateur Radio Club Project

VK4OQ,
P.O. Box 7665, Toowoomba Mail Centre, QLD 4352.
E-Mail: john.bazley@bigpond.com

Montenegro's exciting debut

I don't think that any previous new country has had such large scale operations launched at the same time and so soon after being approved for DXCC as Montenegro. I am sure that everyone who wanted a contact with this new country was not disappointed. It will be very interesting to see the statistics of these operations when they are completed. Particularly the breakdown of QSOs, by band and continents, taking into consideration the poor conditions that we are experiencing at the moment.

Brief details of the stations and operators:

The first team to announce activity from the newest DXCC Entity, The International Montenegro Festival (IMF) group began their activities on July 20th with the callsign 4O3T following an opening ceremony including a luncheon for the participants, and special honoured guests.

The team operated from four different locations along the Adriatic Coast line. The list of operators who took part included -- 9A6AA, A61M, DJ7EO, DJ9ZB, DL3DXX, DL6LAU, DL8OBQ, DL5NAM, DL7AJA, DF3TJ, G3TXF, I0SNY, I8NHJ, IK8HBA, I1JQJ, IK1ADH, IK1PMR, K1ZZ, KA1ZD, K2LEO, K2WR, N6OX, W6OSP, WW5L, LZ1JY, LZ1UQ, LZ2UU, OH2BH, OH2RF, OH2TA, ON4IA, ON4ATW, ON5TN, PA0R, PB2T, S50R, SM0W, SP5XVY, T95A, UA3AB, UA4HBW, UA4HOX, YU1AA, YU3YQ, YT3T, YT6A, YT6T, YT6Y and Z35G. QSL cards to 4O3T go via YT6A: Ranko Boca, Nikole Ljubibratica 78, Herceg Novi, MONTENEGRO.

The second team active from Montenegro used the callsign YU6AO and operators who took part included -- YU6AO, YT1AD, YU1AU, YU1NR, YU7NU, YU7KW, 4N1JA, YT7AW, RA3AUU, RW3QC, RK3AD (?), YU1DX, Z35A, Z32AU, S56A, IZ0BTV, YZ1EW, YU6ST and YZ6DCT. The YU6AO host station operated from the capital city of Podgorica with four stations. QSL direct to YU6AO, Gojko Mitrovic, Crnojevica 4, 81000 Podgorica, Montenegro or via the bureau. Note YU6AO has been approved for DXCC for QSOs commencing from 0000 GMT, 4th July onwards.

Laccadive Islands

In reaction to the VU7 announcement recently the National Institute of Amateur Radio (NIAR) from Hyderabad, India released a press release of the upcoming Lakshadweep (Laccadive) DXpedition planned for mid-January 2007. "All the announcements regarding VU7 activity conducted in January, 2007 will be made by NIAR HQ, Hyderabad and NIAR will not be responsible for announcements made by individual participants to any other agency." NIAR cited "the event can only be achieved with collaboration of various agencies of the Government of India including supporting and sponsoring agencies." At this point NIAR wants all participants to keep "correspondence" between themselves and NIAR!

DXCC News

With the addition of Section II, Criteria Rule 1c) to the Political Entity criteria, certain former separation entities may now qualify as Political Entities. One such entity has been determined to be American Samoa. American Samoa is now a Political Entity for DXCC purposes.

As a result of the reclassification of American Samoa, and upon the filing of a request and substantiating evidence, and with the concurrence of the DXAC and the Awards Committee, Swain's Island has been added to the DXCC List.

Swain's Island, entity number 337, qualifies as the first separation entity from American Samoa, now a Political Entity. The distance between American Samoa and Swain's Island has been determined to be in excess of 350 km as required by DXCC Rules Section II, Paragraph 2, Section b). QSO's made with Swain's Island on or after 0001Z; July 22, 2006 will count for DXCC credit.

July 26th saw the announcement that the following would be activating Swain's Island. The team was lead by JA1BK/KH6BK, Kan; along with him was F6EXV/WH7S, Paul, K1ER, John, AH7C, Tets, K8YSE, John, and KS6FO, Uti (XYL). They commenced operating on July 28 and finally closed on August 2. QSLs for this KH8SI operation via JA1BK.

KH3 Johnston Island. YL W7KFI, Susan, had sailed from Pearl Harbour, Hawaii headed for Johnston Island but had to turn back to California instead. Susan, who sails a Hunter 42, is now trying to set off again. She expected to leave California for Hawaii Sunday morning (June 18th) a 16-21 day voyage. After a three-week rest in Hawaii she will be off again heading towards Johnston Island.

LX Luxembourg. Five Belgians, OQ0A, OP7A, OO7A, ON6RJ and OR9Q will be active from September 29th to October 1st on 80, 40, 20, 15 and 10 m CW, SSB and RTTY. They will sign LX/ their home call. QSL direct or via the bureau to their individual home callsigns.

OX3PG, Greenland, will be active for 11 months starting July 30th 2006. Operator Dwayne KD4POJ plans to be on most bands and modes and get into contests as work permits. QSL direct only, via WA0SMQ.

P2 Papua-New Guinea, G3KHZ, SM6CVX and G0LMX will activate the Trobriand Islands, OC-115, from October 2nd to October 10th. QSL's via G3KHZ. Then moving to Daru Island, OC 153, from October 11th to October 14th for this operation QSL via SM6CVX.

J6/G3XAQ, Phil Whitchurch G3SWH, has recently got a copy of the log for the 2002 and 2004 operations. QSL cards are now available direct or via an e-mail request for a bureau reply, or via the bureau the old-fashioned way. Phil reminds us that the bureau process is inherently slow. He usually sends outgoing cards via the RSGB once a year.

continued next page

Silent key

Peter Pavey VK3VB/G3NFT

29.11.1939 - 1.7.2006

Dad was aged 66, born in Exeter, England on 25th November 1939, the last 30 years spent in Australia. His first memory of radio is when he was 5½, listening to the "McMichael" radio chime with Big Ben as the station fired up at 5:30 am.

Over time the "McMichael" moved into the bedroom; an external antenna was added. With the apprentice radio mechanic position having already been taken, Peter started an electrical apprenticeship on 1 January 1955.

The following year Dad visited the "shack" of Tony, the apprentice radio mechanic. Tony later became G3LMT. The afternoon was spent listening to amateurs from around the world. During the next 12 months, they experienced portable operation visiting the local field days. The transmitters were limited to 10 watts DC input CW only. Mains power was not allowed. The passion for portable operation was a lifelong one.

Shortly after a field day, he became aware of an ex-government radio sale and for 10 pounds became the owner of a Marconi CR100. It covered 100 Hz to 30 MHz in 8 bands, with noise blanker, RF & AF gain and an antenna trimmer. Sensitivity was good for 20 m, but not on 10/15. Dipoles were put up for 10, 15 and 20 metres, a half size G5RV for 40 m and 132 ft wire for 160 metres.

With no courses, it was a case of reading the RSGB Handbook and asking a lot of questions to get a licence! Theory was turned into practice, building 160 metre transmitters, but after 12 months of study he was disappointed to fail his first exam in mid 1958. This led to a trip by bicycle and train to Cardiff, Wales, to sit the exam again in October 1958 – with a pass. Limited exams didn't exist so CW was next and the callsign G3NFT was received on 13th Dec 1958. First contact was at 13:40 on 20 m. More contacts took place on 20 m, 160 m AM and CW that day. Dad's last QSO was with me on the local 70cm repeater the day he went into hospital in June.

1964 saw marriage to Patricia (now VK3OZ) and the gradual arrival of harmonics Paula, Patsy-Ann, Phil (VK3YB), Peter and Petra.

In 1976, the family migrated to Australia settling in Frankston, Victoria. VK3BFA was his first VK callsign and it wasn't long before a variety of dipoles, beams and quads adorned the roof. Dad changed his callsign to VK3VB and moved to Tooradin in 1985. This gave enough room for the long-held dream tower and beam. The Nally tower and Log Periodic cannot be missed as you drive down the highway.

While at Frankston, Dad joined the Frankston and Mornington Peninsula Amateur Radio Club and encouraged me to get my licence. Since 1991, he has been an active member of the Gippsland Gate Radio and Electronics Club Inc, including serving as President. His passion was for CW and portable operation, but he had a keen hunger to learn about any aspect of our great hobby, which saw experimentation with ATV, weak signal VHF/UHF and 6 m SSB. Many local amateurs are on-air today after sitting exams at his QTH and learning CW from Peter.

Peter is survived by his wife Patricia VK3OZ and harmonics Paula, Patsy-Ann, Phil and Peter.

Amateur radio has truly lost one of its gentlemen.

submitted by Phil VK3YB

DX News & Views continued

He plans to go LOTW at some point in the future.

BX3/DJ3KR. Jurgen will be on the air as BX3/DJ3KR from the end of September until early November.

VQ9LA. Larry, will be on the island for another year, scheduled to leave in December 2007. His company's contract has been renewed. His Alpha 99 and FT-1000 are both being repaired, his K9AY receiving loop is going to be fixed and he expects to have four Beverages switchable to use on receive this year. He still has some "AM hash" but says there's not much more he can do.

ZM8CW. Jacky hopes to go back to ZL8 later this year, says Ron, ZL1AMO, who is handling the QSLs for the recent operation. Jacky could not stay more than five days and he was only able to operate for four days during his spare time. He reported that band conditions were very bad as he noticed weak signals and high noise on most of the bands. Jacky tried 160, 80, 15, 12 and 10 metres without much joy. He made just under 2,000 contacts on 17 through 40 metres CW only.

FH Mayotte Island. A two-man team from Germany has announced they will be operating from here starting at the end of August through to September 11th. Look for DL2RUM, Tom, and DJ8NK, Jan, to be QRV as TX5T and TX5NK. Plans are to be active on 6 through 160 metres on CW, SSB and RTTY. QSL via home calls.

Having trouble finding an address for a certain Russian station? K3ZO, Fred Laun, suggests trying http://ric.cqham.ru/. The resulting addresses are in Russian Cyrillic script, however if you print out the address on your printer, paste it on an envelope and write "Russia" you are good to go!

YX5IOTA - La Tortuga Island (SA-044) Members of the 4M5DX Group along with the support of MDXC plan to operate YX5IOTA from September 24th to 30th. Team members will include: YV5ANT, YV5KAJ, YV5WW (OH0XX), YV5TX, YV5MSG, YY5RED, YY1RDX, YV1FM, YV5SSB, YY5HBO, YY1ALE, YV1CTE, YV5OHW and YY4MP. They will be QRV on all bands and modes. QSL via IT9DAA.

Special thanks to the authors of *The Daily DX* (W3UR) and *425 Dx News* (I1JQJ) for information appearing in this month's *DX News & Views*.

ar

David Smith VK3HZ – vk3hz@wia.org.au

Weak Signal

David Smith - VK3HZ

It's great to see our newest arrivals to amateur radio taking a keen interest in weak signal VHF/UHF operation. One such person is 14-year-old Tom VK4FTDX located at Glendon, about 180 km west of Mackay. Tom is running an IC-706 to a 12-element homebrew wide-spaced Yagi up about 13 m.

On the morning of July 31st, conditions were very good in his area and at around 6.30 am he heard the Toowoomba beacon (716 km) on 144.440 MHz at S9+30 dB. On 2 m, he managed to work VK4TZL (5/5, 688 km), VK4JMC (5/9+, 827 km), VK4AFL (5/9, 854 km), VK4KDD (5/3, 845 km) and VK4ARN (5/6, 871 km). Well done Tom, and keep up the good work.

On August 10th, favourable weather conditions produced some good propagation across the southern part of the country. Ron VK3AFW in Melbourne reports:

Usually we associate mid winter troppo with inland DX, but this morning we had summer-like conditions in the SE. I noted that I could work the Mt William 2 m repeater in central-west Victoria, something that occurs reasonably regularly, but then Jim VK3II, reported that Phil VK5AKK, was calling CQ on 144.200 a few minutes before 9:00 am local. I swung the beam and asked Phil to QSY to 144.180. Phil peaked 5x9 but there was noticeable QSB. He gave me 5x7. John VK3ACA, also worked Phil and Ken VK3ALA, in Jindivik, Gippsland, was copying Phil but wasn't able to get a clear channel and complete the QSO. I announced I was going to 144.1 where I worked Brian VK5UBC in Gawler at 4x1 - he gave me 5x1. Gary VK5ZK, in Goolwa then called me and his signal was easy copy although not getting above S2. I didn't hear any one else. Fred VK3AZG copied Phil with his beam NE but had no copy of Brian or Gary with his beam West North West. That's not his best direction. A check of the beacons showed the 2 m VK5VF beacon at a steady 5x1 with little QSB. Channel 5A sound from Mt Dundas very strong. A high of 1031 mB and Hepburn says fair to moderate across the path.

Thanks for that, Ron. Brian VK5UBC also had some good contacts that morning:

I managed to work the following on 2m SSB: VK2KRR (5/7, 760km), VK2EMA (5/1, 840 km), VK3II (5/5, 730 km), VK3ATS (5/9, 300 km), VK3LY (5/7, 328 km), VK5DK (5/9, 400 km) and VK3AFW (5/1, 660 km). On 70 cm, I worked VK3ATS (5/7, 300 km) and VK5DK (5/7, 400 km). Also was able to work several interstate repeaters with good contacts on Mt Macedon and Albury/Wodonga 2 m repeaters.

New Microwave ATV Records

On Saturday August 5, Nick VK2ZTY and Jack VK2TRF completed a record 195.2 km 2415 MHz ATV QSO. Nick was located on Mt Nardi, north of Lismore and Jack, with Dan VK2GG, was at a point about 40 km west of Dorrigo near Ebor. Nick used 25 W into a 22 dB gridpack antenna while Jack had 18 W into an identical antenna. Picture quality at both ends was P5++ meaning no noise or interference at all.

Two days later, Jack travelled to Mt Nardi with his 10 GHz gear and Dan was joined by Gary VK2UNI. After waiting most of the day for rain to clear along the path (10GHz doesn't like getting wet on a direct path), contact was made just before 4 pm. A two-way QSO was completed with P4 signals at the Mt Nardi end and P3 signals at the Dorrigo end. Dan used a 1.2 m dish for receive while Jack used a 1 W transmitter into a 17 dB horn about 7.5 cm across. Dan then fired up his 200 mW transmitter into his 60 cm dish and Jack received the signals on another 17 dB horn. Both systems were on 10236 MHz. The path was 194.4 km, as Jack had to descend the mountain to avoid some trees which are impervious to 10GHz.

Both of these contacts are, as yet, unofficial VK records.

EME

Hot on the heels of the news in July's column of Alan VK3XPD completing the first VK EME contact on 5.7 GHz, another VK3 has now become active on 5.7 GHz EME after a lot of work. Charlie VK3NX reports:

Having spent the better part of 18 months trying to perfect my "QRP" setup on 5.7 GHz along with a QTH move etc., I finally had the very encouraging result in the first week of August of hearing my own echoes on 5.7 GHz EME. Hot on the heels of Alan VK3XPD, who became the first VK to establish a 5.7 GHz QSO on the EME path, on the 10th August I had the very rewarding experience of completing a QSO with the OK1KIR team. Signal reports were a very "easy" O report both ways. The QSO took 15 minutes to complete and it was a challenge tracking the moon, Doppler shift, and conducting a CW contact all at once with very little margin for error! Nonetheless, after many trials and tribulations, I was pleased to make the QSO with my first attempt at the new QTH and with the new setup. The circular feed on this band made all the difference, compared with previously failed attempts running linear polarisation, as the European stations on this band are all running CP. (Fading seemed to be non-existent, however a 15 min QSO is no real indicator). Equipment at VK3NX consists of all homebrew equipment: using an N1BWT-design transverter, numerous PA stages to arrive at 20 W at the feed point, approx 0.7 dB NF 30 dB gain LNA followed by another LNA prior to mixer. Dish is 3.7 m. Feed is VE4MA with "circular polarising screws" with actuator drive for both azimuth and elevation. Control is via PICAXE-based software. Moon tracking is via a logarithmic detector (operating on a sub receiver channel on 144 MHz) to track moon noise. The 2 m IF driver is an IC746. I hope to continue on 5.7 GHz EME with a number of "improvements", until all possible QSO partners have been exhausted.

Charlie VK3NX's 3.7 m EME Dish looking towards the moon

Birthday Greetings

Finally, one of our most well respected VHF DX operators celebrated his 95th birthday on August 11th. Wally Green VK6WG, in Albany, is one of the most active VHF DX operators on the VK6 south coast and is usually worked at least once during the summer months by stations in the eastern states.

Wally still holds the Australian records for 1296 MHz (2455 km), 2.4 GHz (1885 km) and 3.3 GHz (1885 km).

Everyone in the east hopes to hear Wally's signals again soon.

(Thanks to Leigh VK2KRR and Wally VK6KZ for that information).

Please send any Weak Signal reports to David VK3HZ at vk3hz@wia.org.au.

Digital DX Modes

Rex Moncur – VK7MO

Joe Taylor K1JT has released a new version of WSJT - version 5.9.5 - which is available from his web site at http://pulsar.princeton.edu/~joe/K1JT/. He has also released a new "User's Guide and Reference Manual" which is available from the same site. The most important features of the new version are a dramatic reduction in false decodes and an improved AFC and Sync system for JT65c, that allows the program to cope better with frequency drift and libration effects on 1296 MHz. VK4AFL (3.7 meter dish) and VK7MO (2.3 meter dish) have found that through the use of the new version they have been able to complete 1296 MHz EME contacts at 10 watts whereas they previously required 20 watts. Decodes have also been achieved both ways at 5 watts.

There has been one important operational change. With previous versions, it was general practice in VK to use the second TX line and replace the grid square with a dB level report such as in the following format:

VK7MO VK4AFL -27 OOO

It appears that overseas practice was to send either the -27 report or OOO report but not both. Unlike the old version, the new version does not respond to messages with both systems of reporting which has trapped a number of us in VK. With new version you can use either reporting system but not both – thus the options are:

VK7MO VK4AFL -27

VK7MO VK4AFL QG62 OOO

Trevor VK4AFL reports, "With the new version I have not received one false decode in a few hours of operating QRP EME but when I once reverted to the previous version I immediately encountered false decodes". The improvement in false decodes is very impressive. But it is first useful to explain that there are two types of false decodes as follows:

1. False Positives: These occur when you receive a message (eg callsign or signal report) from the station you are working in error and thus you might believe you have completed a QSO but it would be invalid.
2. False Negatives: These are when you see an odd callsign which is easy to recognise as being false. These do not lead to invalid QSOs because if you call them they will not respond and if you see them later in a QSO you just reject them.

In practice, it is the False Negatives that dominate and, while these can be annoying, one needs to be aware that they do not lead to invalid QSOs. We are faced with the conundrum that it is the False Negatives that you see – but these don't matter – but it is the False Positives that you are not aware of that do matter. The way to get a handle on the False Positives is to do simulation tests by looking for a particular callsign, which is not being transmitted, as an indicator of the rate of False Positive Errors. For example, I look for the callsign VK3AYH (which I include in the call.txt file) as an indicator of False Positives when the message being transmitted is to VK3AXH.

I have done simulation tests under worst case conditions designed to stimulate the maximum number of false decodes. These worst case conditions are with the signal at -29 dB, and the program set to "aggressive", "exhaustive", "sync" = 0 and "freeze/tolerance" disabled and with the Deep Search decoder using the full call.txt list of 4720 callsigns. With the older software version, 5.9.4, I found the rate of false decodes was almost 50% under these extreme settings, but of these only 0.01% were False Positives that could lead to an invalid QSO. The False Positive error rates increase by a factor of about 10 to around 0.1% when "Sked" was enabled.

With the new version, the rate of false

decodes dropped to 0.3% and the error rate for False Positives is so small that I could not find one. From tests on the earlier version it was found that the rate of False Positives could be derived from the false decodes divided by the random chance that the expected message would be found on the list. If this also applies to the new version, as one would expect, the error rate for False Positives would drop to around 0.0001%. As for the earlier version, I would expect this error rate to increase by a factor of about 10 if "Sked" is enabled.

Now I qualify this by saying that all the above tests were with white noise and the rates will increase under "on-air" conditions with birdies and interfering signals. While it is early days and I have completed only about 15 hours on air testing I have not seen one false decode with the new version.

In an attempt to stimulate the rate of False Decodes in the "Real World" situation, I have left the program running for almost two days on 144 MHz with the antenna beaming over the CBD of Hobart to produce lots of birdies and rubbish. I again used the extreme settings with sync set to 0 so it gains sync almost every time from the Hobart "rubbish" and attempts a decode from this "rubbish". I used two receiving computers, one set to Sked and the other using the full call.txt list of 4720 callsigns. The one set to Sked gave no False Positives in some 40 hours of testing. The one set to the full list gave an increased False Positive Error Rate of 0.0006%. While I would need a lot more data it seems reasonable to assume the rate for Sked would again be around 10 times higher at around 0.006%.

As the error rates measured above are for individual decodes and at least four messages must be exchanged the actual error rate could be four times higher if these worst-case conditions pertained for every message of the QSO. However, with typical QSB this is extremely unlikely and a doubling of the error rates is a more reasonable, but still conservative, figure in practice for a complete QSO. Based on doubling of the individual error rates the Table below gives an indicative percentage level of confidence one can have with JT65 QSOs in marginal conditions where all extreme setting are used.

The figures in this table are based on extreme settings designed to "stress test" the program to its limit and are thus very conservative. Error rates will be much lower if one, for example, sets sync to 1 as recommended by the program's author or if the signal is slightly stronger than -29 dB.

I suspect most people would consider that even 98% confidence, with the old version in a noisy environment with sked enabled was acceptable. However, some have had a concern when they saw False decodes of the False Negative type even though these were readily rejected. The substantial improvement with the new version should allay any lingering fears.

Please send any Digital DX Modes reports to Rex VK7MO at rmoncur@bigpond.net.au.

Version	Country Environment on 144 MHz or City on 1296 MHz, No birdies	City Environment on 144 MHz With birdies and "Rubbish"
5.9.4 Sked enabled	99.8 %	98 %
5.9.4 Full call.txt file	99.98 %	99.8 %
5.9.5 Sked enabled	99.998 %	99.98 %
5.9.6 Full call.txt file	99.9998 %	99.998 %

continued next page

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The Magic Band – 6 m DX

Brian Cleland – VK5UBC

Not a lot of activity on 6 m during the July period with only a few sporadic E openings.

On 18th July, Wayne VK4WS worked VK3's VG, DUT, WN, XQ and VK5UBC.

The afternoon of 1st August saw the band open for several hours covering a large area of the eastern states and SA with John VK4FNQ Charters Towers in Northern Queensland having several contacts into VK2, 3 & 5 and Brian VK5UBC into VK2 & 4.

On 2nd August, an opening occurred between VK4 (Sunshine Coast area) and VK5 with VK5AKM and VK5UBC working VK4's ID, AHW, ADM & CWJ.

Noel VK3FI (VK3FGN) advises that the Mildura 6 m beacon is still operational using the callsign VK3FGN on 52.438 MHz, however it is only running low power of about 3 watts into a J pole at about 15 feet on top of a communications building in Mildura.

It is hoped that the Mildura site will be a temporary situation if the antenna at the old location on the Merbein water tower can be repaired.

There should be some big signals out of the Launceston area this summer. Joe VK7JG advised that, because the rotator could not handle the wind loading, he has replaced his 9-element 2WL 6 m beam

In its place is a 7-element M2JHV which is about 8 feet shorter for only a loss of 1 dB and half the wind loading.

Since erecting the aerial, Joe has worked VK4BT and VK4ADM on 3/7/06 and VK4CZ and VK4DMI on 23/7/06.

Norm VK7AC is now the owner of Joe's old antenna. Meanwhile Karl VK7HDX is building a 6 m Moxon antenna. It will be interesting to see how it performs.

Peter VK5ZLX in the Barossa Valley is gradually installing (or should that be 'onstalling') his antennas on a newly erected tower.

To date, Peter has got his 2 m & 70 cm antennas up and shortly will be erecting his 9 el M2 6 m beam which he used with great success in Alice Springs.

Please remember to send any 6 m information to Brian VK5UBC at bcleland@picknowl.com.au.

ar

Norm VK7AC's Antennas - from top, 18 el 2 m, 9 el 6 m, 3el StepIR

Joe VK7JG's Antennas - from top, 2 m 12 el, 28 el 70 cm, 2 m 12 el, 7 el M2JHV 6 m

Do you have a story to tell about amateur radio?

Perhaps about a DXpedition, or a piece of gear you have built. Maybe you are into experimental stuff.

No matter what, if it is about amateur radio you will have an audience in these pages. So get to it, contact the editor, tell him what you have and he will let you know how to go about getting your name (and topic) in print.

Bill Magnussen VK3JT

Preparing your station for the High Earth Orbiters

A word of caution before we begin part-2

The satellite game is very dynamic. Just how quickly it can change was demonstrated in late July when the Eaglepedia site at amsat.org contained some news that has the potential to impact heavily on all future Oscars. I mentioned "Eaglepedia" last month. It is a site within a site, which allows the Eagle development team to keep everyone informed about the latest ideas concerning the design and construction of the new Eagle high orbit satellite. The team made some preliminary announcements, which on the surface could throw several spanners in the works. Their exhaustive study of the currently most favoured bands, U, L and S has shown that perhaps even before Eagle is launched these bands will be almost useless for amateur radio satellite downlinks and may well be unsuitable for uplinks. That has caused them to undertake a major re-think of the whole design; consequently, users of all future Oscars will need to be prepared to make changes in their ground station requirements. The relentless march of domestic computer based communications technology and networking is already biting deep into L-band and making S-band unusable in city environments around the world.

The deployment of the European Galileo GNSS (GPS competitor) navigation system is poised to have a detrimental effect on all serious weak signal work. Satellite design teams must use their crystal ball to look 10 years or more down the line when making fundamental decisions regarding frequencies, bands and modes. Government agencies move quickly to protect new communications technology from interference and in some countries transmission on L-band has already been severely curtailed due to its potential for interference with the new "essential" services. No such protection is afforded amateur radio activities however from the ever-increasing noise floor caused by wireless computer communications. The Eagle team has predicted that with the launch of Eagle still being about 4 years away, inclusion of any facilities for L-band and S-band may well be a waste of time except perhaps for some telemetry downlinks.

Does this mean we are to be denied two of the bands that were emerging as optimum just one satellite generation ago? Perhaps it does. Early in the last column, I mentioned that L-band and S-band would run on the two up-coming high orbit birds. P3E is at a much later stage of development than Eagle and it will have facilities for L and S bands, which will allow AO-40 type ground stations to take part. Now just a month later, it looks very much like this will not be the case with Eagle. I again urge you to keep an eye on Eaglepedia on the AMSAT web site and to keep an eye on the AMSAT-DL web site, especially if you are in the process of planning your HEO ground station. P3E should give us some years of operation on these bands and if you are out of town, the noise floor problem may not bite as deeply. However, the long-term future of L and S bands on amateur radio satellites could well be influenced by events already underway in the all-consuming world of domestic entertainment and communications. So – taking all that on board, back to the plot!

The AMSAT group in Australia

The National Co-ordinator of AMSAT-VK is Graham Ratcliff VK5AGR. Contact Graham if you wish to be placed on a mailing list for breaking news and net reminders. As a forum for members AMSAT-VK operates two monthly nets.

AMSAT-Australia Echolink Net

The "Echolink" net meets on the second Sunday of each month. Anyone with an interest in Amateur Radio Satellites is welcome to join the net. Graham VK5AGR acts as net controller. The net starts at 0500UTC during summer time periods and 0600UTC during winter standard time periods. Connect to the AMSAT conference server on Echolink a few minutes before these times.

AMSAT-Australia HF net

The HF net meets informally on the second Sunday of each month. In winter (end of March until the end of October) the net meets on 3.685 MHz at 1000 UTC . In summer (end of October until end of March) the net meets on 7.068 MHz at 0900 UTC. Start listening 15 minutes before these times.

All communication regarding AMSAT-Australia matters can be addressed to:

AMSAT-VK,
9 Homer Rd,
Clarence Park, SA. 5034

Graham's e-mail address is:
vk5agr@amsat.org

Part-2 Antenna requirements for working the High Earth Orbiters

If you have convinced yourself that it might be worth the effort to have a serious go at the HEOs: Let's look at some of the questions that arise – and there are quite a few. This is where you decide if you are serious or not! How much antenna gain do you need? What is Circular Polarisation? Do you need it? Do you need to switch polarity? Do you need elevation rotation? What about receive pre-amplifiers? Realistic gain and noise figures. Where should you fit them? Is manual control good enough or do you need auto-tracking? Is "flip-over" mode worthwhile? I am going to take time to discuss some of the myths associated with these topics and see if we can separate them from the realities.

The first myth - how much gain can you expect from any VHF/ UHF Yagi?

Glossy brochures can be deceptive and will always put the best "spin" on any product. However - real antenna gain is of utmost importance in any weak signal endeavour. Published gain figures aim to sell antennas. You will sometimes see them quoted in dB. "Our 'ionosphere-buster' has a hefty 22 dB gain". Looks exciting but means nothing. The decibel is a comparative expression, not an absolute one like Amps. The antenna gain should be expressed in comparison to some standardised radiating source. It

is often a reference dipole, in which case the gain would be quoted as so many dBd (dB gain compared to a dipole) or dBi, if comparison is made to a theoretical isotropic (point) source. Front to back ratios can be correctly expressed in dB, as can comparisons between the performance of different antennas. This situation became so serious several years ago that some amateur radio magazines refused to accept advertising matter from antenna manufacturers that contained gain claims. This was not to suggest dishonesty but rather to prevent confusion among unwary readers, the magazine editor often getting the blame for unreal claims.

The story does not end with commercial antennas either. Authors and designers, anxious to sell their new ideas may be tempted to exaggerate. Therefore, here are some tips. Begin by reading the fine print. Do not take notice of gain claims that are not expressed in meaningful terms, either dBd or dBi. Be cautious of amateur designs unless presented by a recognised guru and backed up by peer review with repeatable measurements. If you decide to build from an established design, remember that it is in your hands to follow the original design faithfully – and do not blame the designer if you cut corners and it does not measure up in the end.

Be careful of "word-of-mouth". Some people are unwilling to admit they bought a 'lemon' and on the other hand, some are reluctant to admit they messed up the construction. So set your sights realistically. A gain figure of 20 dBd on two metres is very eye-catching. It is also difficult to attain in practice even with long booms or multiple Yagis working in concert. Gain claims of 12 to 15 dBi for a single long crossed Yagi are likely to be reasonable, if they come from reputable manufacturers or designers who properly submit their designs to peer review before printing. I would be suspicious of higher figures unless they were for very long Yagis with their attendant construction and handling difficulties. A look at the link budgets of the various modes/satellites will show that if you can achieve a real 10-12 dBi on VHF and 12-15 dBi on UHF you will be in the running. Remember you have to double the boom length of a Yagi to get an extra 2.8 dB gain and sheer size quickly becomes a problem at two metres wavelength. Remember too that if the satellite is using circular polarisation, as many do, you will lose a precious 3 dB if your antenna is linearly polarised. CP will be discussed next. Pretty well all serious operators venturing onto 1.2 or 2.4 GHz will use a dish of some sort and in that case, real gain figures approaching and exceeding 20 dBi can be achieved using medium to larger dishes and simple feeds. Such figures are indeed desirable to do consistently good work on "L" and "S" bands. On "U" and "V" bands however, most operators will use Yagis where physical size quickly becomes a problem in limiting realistic gain.

Now, what is all this fuss about circular polarisation?

It stems from the fact that all satellites, even those in the lowest orbits, spend their lives outside the ionosphere. Normal ionospheric refraction does not play much of a part, except for those, very few nowadays that carry HF modes when it can produce some interesting over-the-horizon effects. In general terms and neglecting bending and ducting that happens at some times of the year, mostly at lower angles of penetration, VHF/UHF/MW signals from the high orbiters in question will pass right through the ionosphere without much in the way of refraction, reflection or attenuation. However - there is a fly in the ointment, a large one. The signals both up and down will suffer something called Faraday rotation. The polarisation will change during the journey through the ionospheric layers. The rotation is random and therefore quite unpredictable. It can be slow or rapid and it increases at lower elevation angles. Anyone who has ever worked Scandinavia via Oscars 10, 13 or 40 at 0 to 5 degrees elevation with the bird around apogee will know what I am talking about. Circular polarisation (CP) will help overcome this effect. In short then, if you are going to get serious about HEO satellite operation, CP is highly recommended.

There is a further problem however. CP has a "hand" or a direction of rotation. You can have either right-hand CP or left-hand CP – and ne'er the twain shall meet. There is an enormous price to pay for getting it wrong and it is not always easy to get it right. Even NASA got it wrong on one famous occasion and they almost lost an expensive spacecraft. The hand of polarisation of antennas like the helix is easy to tell apart. A helix wound for right-hand CP (RHCP) will look like a right-hand thread. It is as simple as that. You need the same "hand" of polarisation at both ends; get one end wrong and signals just disappear. Yagis with phasing harnesses are not so easy to determine. Patch antennas can be difficult to the casual glance. That is where switching comes in handy, then you have the choice of either hand. Switching also takes care of the fact that some satellites use RHCP and others LHCP. Still others use linear polarisation or combinations of all. This can be for various reasons, but it is often done to reduce receiver desensing on the satellite.

In summary, switchable CP is a very attractive proposition for the serious satellite operator and as a result, most operators take the trouble to implement it.

Do you need that elevation rotator?

Back in the early days when AZ/EL rotators were virtually unobtainable or impossibly expensive, we used the trick of mounting the Yagi boom permanently at an elevation angle of 20 degrees or so. Using short Yagis with moderate gain, it meant that the beam-width of the Yagi would cover pretty well from horizon level to about 45-50 degrees. Some bright spark had worked out that 90% or so of available satellite passes were within this range, so if you were prepared to miss out on a few very high angle passes, you didn't need an elevation rotator. That worked well for LEOs and still does today but do not expect it to work on the HEOs. To begin with you need more gain and more gain means narrower beamwidth. If you go to the trouble of building an antenna system with enough real gain to work a HEO reliably at apogee you can forget about fixed elevation as an option. Therefore, the answer is yes, you do need elevation rotation control if you are going to pursue seriously the HEOs.

Do you really need that receive pre-amplifier?

"But my radio's got a built-in preamplifier". You often hear this plea when the topic comes up. All radios are built to a price. The pre-amp in your radio will be good enough for most amateur radio purposes. If however you have committed yourself to the cause of working the HEOs or doing other weak-signal work, you will probably find it is simply not good

enough. There are two main reasons. One – the gain or more likely, the noise figure may be found wanting and – two – being inside your radio, it is in the wrong spot. Why? To exploit the virtues of your u-beaut pre-amp, it needs to be as close to the feed point of the antennas as possible. One may argue that the two-metre band is marginal in this respect and I will come to that in a moment. As the frequency increases, it becomes more and more important to locate it upstairs. No serious operator would think of mounting a 2.4 GHz antenna at the "mast" end of 50 metres or even 10 metres of co-axial cable and the down-converter or pre-amp at the "shack" end. You would not hear anything! GPS receivers are a case in point. The main antenna element is an integral part of the first active solid-state device. Early ones were gold plated and pressure welded to the input gate of the GaAs FET. The idea is to reduce the number of noise-producing components between the antenna element and the device that sets the system noise figure.

The same principle applies to satellite earth station antennas and any other weak signal applications. Sky noise from all sources, solar, planetary and galactic diminishes as the frequency increases, finally leaving only the "microwave background radiation" hiss of about 3 degrees Kelvin. According to Kraus, the average sky temperature at 150 MHz is about 290 K. Again, according to the same source, this equates to approximately 3dB in terms of noise figure. Some people use this to mount an argument for not bothering about mast mounting your 2 m pre-amp. My first excursion into this kind of practice was with the NOAA weather satellites some 20 years ago. A good set of "filtered ears" can fill in many gaps in ordinary voice communications. However, when it comes to data, and in particular, picture data, missed data is missed forever and you end up with gaps in the pictures or noise-bands right across if the losses are great enough. I was astonished at how much the results improved when I mounted the pre-amplifier on the boom of the cross-Yagi, adjacent to the feed point. No more missed lines. No more missed pixels. Just a perfect picture from horizon to horizon.

Remember all this was happening on 138 MHz, not all that far from our 2 m band. That experience convinced me that it was well worth the effort of weather proofing even a 2 m pre-amp and mast mounting it. The best way I can explain this goes back to Kraus's 'average' sky noise. There are some very powerful noise sources out there in galaxy-land but in general, they are point sources and widely separated in the sky. Their sheer intensity brings the average up but your antenna is not very often going to be pointing directly at one when following a satellite across the sky. You can neglect this point if you wish but you will never know the real potential of your system if you do. It can make the difference between strong signals and weak signals, between perfect readability and signal lost in noise. It means you will need a totally weatherproof pre-amp enclosure. It means mounting it on the boom right alongside the driven element. If you are going to transmit using that antenna, it means switching relays in-built. Again, it looks like a real chore. Most serious operators would not consider any other approach at UHF and microwaves. It does not matter if you are going to build or buy, go for a gain of about 15-20 dB and a noise figure of less than one dB. Many transistors will give these figures in standard designs and a host of relatively cheap pre-amps and kits on the market meet these figures.

Auto-track or manual control?

If you have made a wise choice of rotators, auto-tracking is a breeze. There is no reason why any HEO operator should not use it. We all have a computer of some sort in the shack these days. I use a Kansas City Tracker/Tuner, the ubiquitous KCT/T. It takes care of automatically tuning for Doppler correction as well as tracking the antennas. The KCT/T is decades old now and requires a computer with ISA slots. Remember them? Like me, you are showing your age if you do. However, the KCT/T is a robust unit that does it all and still works perfectly, so it still graces my radio desk inside an ancient Pentium-1 box running Win98. That so many of these units are still in service is a credit to the original design. The original DOS software is rarely used these days. The development of WiSP produced a very smooth software package, which ruled in the world of digi-sats.

Today, more choices are available. A web search will reveal many tracker designs. Some are in kit form. Some come fully assembled and working. All need to connect to the rotators and most to a computer. Some follow the ideas of the older designs like the "Track-boxes" and "Sat-Trackers" which came with a special purpose processor built in. These days, software does more and more of the clever stuff. Again, whether you decide to build or buy, the greatest boon to any amateur satellite ground station is the auto-tracker. Before you make a decision, an inquiry on the bulletin board will elicit plenty of advice.

Do you need to implement "flip-over" configuration?

Data reception from LEO satellites makes a flip-over system an almost essential requirement of your tracking system, regardless of the data type – pictures or mailbox. To get maximum data transfer during a pass, you need to consider what happens when a satellite crosses your location almost overhead and makes your system want to change the azimuth direction from say 179 to 180 and then to 181 degrees. In other words, for the rotator to "go through south". The NOAA satellites mentioned earlier often do this and I learned very quickly just how easily pictures could get totally messed up by missed and irretrievable data. Reason: Most rotators sold in the southern hemisphere have a mechanical stop at south. You cannot rotate through south. The rotator has to go right back around the full 360 degrees to get from 179 to 181 degrees azimuth. Your rotator driver will take care of this, but while the antennas are moving – this usually takes about a minute – you will not be getting any data. Flip-over mode takes care of this but many people are frightened of it because if you get it wrong, it could tangle up your cables and antennas in the most frightful mess.

The HEO satellites are not usually as demanding, as they do not as often "go through south", but depending on the orbit, they could. My suggestion is to have a good look at flip-over mode. Do not be afraid of it. I know of many stations including my own where it has been in operation for years with no mishaps, no tangles. It takes a bit of thought and effort to set up but I believe it is worth that effort particularly in the case of data downloading.

Keep watching Eaglepedia. I will try to summarise what is happening there next month.

ar

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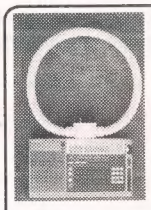

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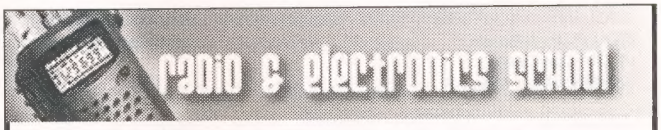

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Are you managing the estate of a 'Silent key'?

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Ken Matchett VK3TL
on (03) 9728 5350
or email: jeandawson@iinet.net.au

Rare DX, special call-signs prefixes and suffixes, pictorials and pre-war QSLs are needed.

Let us save something for the history of amateur radio.

Directory

The Amateur Service:

a radio communications service for the purpose of self training, intercommunication and technical investigation carried out by amateurs, that is, by duly authorised persons interested in radio technique with a personal aim and without any pecuniary interest. 1.56 ITU Radio Regulations.

The Wireless Institute of Australia represents the interests of all amateurs throughout Australia.

The WIA offers one year and 5 year membership for all categories except Concession Student. The fees for each category are:
Full members $75 ($365), Overseas members $85 ($403), Concession members (pensioner) $70 ($332),
Concession members (student) $70, Full members no magazine $50 ($237), Family members $40 ($190)

National Office	Contact	News Bulletin Schedule
10/229 Balaclava Road, Caulfield North VIC 3161, PO Box 2175 Caulfield Junction Vic 3161 Australia	Phone 03 9528 5962, Fax 03 9523 8191, 10am to 4pm daily, nationaloffice@wia.org.au http://www.wia.org.au	Subject to change. See www.wia.org.au follow National News prompts. Contact nationalnews@wia.org.au National VK1WIA news is distributed to all states.

Advisory Committees	Contact	News Bulletin Schedule
VK1 Australian Capital Territory VK1WX Alan Hawes VK1ZPL Phil Longworth VK1ET John Woolner VK1GH Gil Hughes	vk1advisory@wia.org.au	Sundays at 11.00 am VK1WIA 7.128, 146.950,438.050 Canberra Region Amateur Radio Club Email newsletter will be sent on request to president@vk1.ampr.org
VK2 New South Wales VK2QV Chris Flak VK2XCD Chris Devery VK2BFN Adrian Clout	Phone 02 9689 2417 vk2wi@ozemail.com.au vk2advisory@wia.org.au	VK2WI - Sunday 1000 and 1930 hours local.1.845; 3.595; 7.146; 10.125; 14.170; 28.320, 52.525; 145.600; 147.000; 438.525; 1273.500 megahertz. Plus regional relays. VK1WIA news included in the morning
VK3 Victoria VK3JJB John Brown VK3PC Jim Linton VK3APO Peter Mill	Phone 03 9885 9261 arv@amateurradio.com.au	VK1WIA, Sunday 11am and 8pm, 3.615 and 7.085 (LSB), 10.130 (USB), VK3RML 146.700, VK3RMM 147.250, VK3RMU 438.075.
VK4 Queensland VK4BY Don Wilchefski VK4ZZ Gavin Reibelt VK4KF Ken Fuller	vk4advisory@wia.org.au	VK1WIA, Sunday 9.0am via HF and major VHF/UHF rptrs
VK5 South Australia and Northern Territory VK5OV David Box VK5APR Peter Reichelt VK5ATQ Trevor Quick	Phone 08 8294 2992 boxesdnm@lm.net.au peter.reichelt@bigpond.com vk5advisory@wia.org.au	**VK5 South Australia** VK5WI: 0900 am local time. 1.843 LSB, 3.550 LSB, 7.095 LSB, 28.470 USB, 53.1 AM, 147.000 FM Adelaide, 146.800 FM Mildura, 146.900 FM South East, 146.925 FM Central North, 439.975 FM Adelaide North. **VK8 Northern Territory** 0900 local time 3.555 LSB, 7.050 LSB, 10.130 USB, 146.900 FM.
VK6 Western Australia VK6NE Neil Penfold VK6XV Roy Watkins VK6OO Bruce Hedland-Thomas	Phone 08 9351 8873 http://www.vk6.net/ vk6advisory@wia.org.au vk6ne@upnaway.com vk6xv@bigpond.net.au	VK6WIA: 146.700 FM(R) Perth at 0930hrs Sunday relayed on 1.865, 3.564, 7.075, 10.125, 14.116, 14.175, 21.185, 29.120 FM, 50.150 and 438.525 MHz, Country relays 3.582, 147.200 (R) Cataby, 147.350 (R) Busselton, 146.900 (R) Mt William (Bunbury).147.000 (R) Katanning and 147.250 (R) Mt Saddleback. Broadcast repeated on 146.700 at 1900 hrs Sunday relayed on 1.865, 3.564 and 438.525 MHz : country relays on 146.900,147.000, 147.200, 147.250 and 147.350 MHz..Also in "Realaudio" format from the VK6 WIA website
VK7 Tasmania VK7ZAX Phil Corby VK7DG Dale Barnes VK7KK Reg Emmett	Phone 03 6234 3553 vk7advisory@wia.org.au phil.corby@tassie.net.au vk7dg@wia.org.au regemm@ozemail.com.au	VK1WIA Sunday 9am on VK7WI network: 3.570MHz LSB, 146.700 MHz FM (VK7RHT South), 53.825MHZ FM (VK7RAD South), 147.000MHz FM (VK7RAA North), 146.750 FM & 53.825MHz (VK7RNW North West), 146.625 MHz FM (VK7RMD North West), UHF CB Channel 15 (Hobart) and 27MHz CB - 27.225MHz LSB (Hobart). Followed at 9:30am with VK7 Regional News Broadcast also on 7.090MHz LSB & 14.130MHz USB

Notes

1. Only three members of the state advisory committees are listed.
2. All listings are preliminary. They will be updated each month as required.
3. Membership application forms are available from the WIA web site www.wia.org.au or the national office address above.

Cohen prepares for JOTA

~but this time it's different

how our hobby is promoted to Scouts

Meet Cohen Lewis. He's 12 years old, and is a Scout with 1st Casey Scout Group in Melbourne. Cohen has another identity. It's VK3FCLL.

Is that some kind of coded name for a secret agent? No, nothing like that. In fact it's heaps more interesting. Cohen is, in fact, a licensed Amateur Radio Operator.

In March 2006, Cohen studied, sat for an exam, and gained his Foundation Amateur Radio Licence. The Foundation Amateur Radio Licence was introduced by the Government in November 2005, providing an entry level license designed to get people into the hobby. More than 500 people have gained this licence since its introduction, many of whom are young people like Cohen.

Cohen is presently studying for the next level of Amateur Radio Licence, the Standard Licence. This will enable him to use more radio power and use a wider range of frequency bands.

I stumbled across Cohen while searching the web for something, and found his website, where he enthusiastically tells the world what a great hobby he has entered. On his website, Cohen also tells the world that he's a Scout.

By this time I was really curious, so I emailed Cohen, and asked him if he would like to be featured in an article about him and his hobby. After he gained his parents' permission, he consented.

Cohen's Father, Grandfather and Uncle are all Amateur Radio Operators, as are several of his friends. Cohen takes part in local radio nets for young people. These sessions were set up to help newcomers into the hobby to develop their skills and knowledge.

Cohen has taken part in two Jamborees Of The Air, and is looking forward to taking part again this year, this time with his own callsign.

Amateur Radio has been with us for a long time, and in spite of some perceptions about it, the hobby is actually growing in Australia, especially after the introduction of the Foundation Licence.

I encourage Scouts of all ages to take a good look at this hobby. Like Cohen, you will find it interesting and will soon develop enthusiasm for talking to other people around Australia and indeed around the world. A good way to do introduce Scouts to Amateur Radio is to organize a JOTA activity, and have on hand information that will enable them to find out more about the hobby.

To find out more about Amateur Radio, or JOTA-JOTI, contact your Branch Activity Leaders for Radio, Electronics, Communications. You can also visit http://www.wia.org.au/ to find out about Amateur Radio in Australia.

Bob Bristow VK6FJAB, JOTA-JOTI Coordinator, Scouts Australia

49th Jamboree On The Air

10th Jamboree On The Internet

21–22 October 2006

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Amateur

IC-7800

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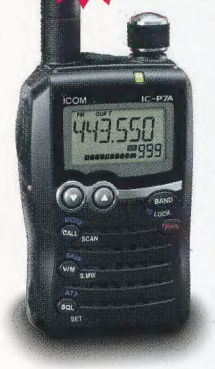

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